MAY 1981 NUMBER 441 -- Part I

Solar-Geophysical Data prompt reports

Data for April 1981, March 1981 & Late Data
Explanation of Data Reports Issued as Number 438 (Supplement) February 1981

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Solar - Geophysical Data

NO. 441 MAY 1981

Part I (Prompt Reports)

DATA FOR
APRIL 1981
MARCH 1981

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SOLAR-GEOPHYSICAL DATA

No. 441

Issued in two parts

Helen E. Coffey, Editor

Joe H. Allen, Acting Chief
Solar-Terrestrial Physics Division

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DETAILED COVERAGE FOR 1980-81 PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

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F.1e	Cosmic Ray Neutron Counts (Alert)	430A154	432A170	433A165	434A183	434A146	435A151	436A165	438A163	439A162	440A159	440A145		
F.1h	Cosmic Ray Neutron Counts (Thule)	430A154	431A150	432A155	433A147	434A146	435A151	436A165	437A162	438A148	439A144	440A145	441A159	
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F.1j	Cosmic Ray Neutron Counts (Tokyo)	430A154	431A150	430A155	433A147	434A146	435A151	436A165	437A162	438A148	439A144	440A145	441A159	
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Notes:

"430A 52" listed under 1980 Apr means that the sunspot drawings for Apr 1980 were contained in *Solar-Geophysical Data* Number 430 - Part I, beginning on page 52.

A = Part I, B = Part II.

----- = no data available.
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APRIL 1981 DATA

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ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

APRIL 1981

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

01 APRIL 1981 PRESTO BOULDER 01/0145Z SOFLARE X2/2B S43W52 01/0117Z IN PROGRESS
01 APRIL 1981 PRESTO TOYOKAWA 01/0243Z TENFLARE 2400 FLUX UNITS 01/0107Z IN PROGRESS
01 APRIL 1981 PRESTO BOULDER 01/0250Z TENFLARE 2000 FLUX UNITS 01/0125Z IN PROGRESS
01 APRIL 1981 PRESTO SYDNEY 01/0251Z TENFLARE 1280 FLUX UNITS 01/0154Z IN PROGRESS
01 APRIL 1981 PRESTO BOULDER 01/1432Z TENFLARE 500 FLUX UNITS 01/1359Z DURATION 20 MINUTES
02 APRIL 1981 PRESTO BOULDER 02/1400Z SOFLARE X2/1B S43W68 02/1059Z DURATION 22 MINUTES
02 APRIL 1981 PRESTO BOULDER 02/2053Z SOFLARE C7/2B S43W65 02/1926Z DURATION 65 MINUTES
03 APRIL 1981 PRESTO SYDNEY 03/0353Z SUDDEN COMMENCEMENT 03/0347Z 30 GAMMAS
03 APRIL 1981 PRESTO KAKIOKA 03/0615Z MAGSTORM 03/0348Z
03 APRIL 1981 PRESTO BOULDER 03/1437Z SOFLARE M8/2B S43W82 03/1041Z DURATION 56 MINUTES
03 APRIL 1981 PRESTO BOULDER 03/1437Z TENFLARE 500 FLUX UNITS 03/0936Z DURATION 29 MINUTES
04 APRIL 1981 PRESTO TOYOKAWA 04/0134Z TENFLARE 110 FLUX UNITS 04/0827Z
04 APRIL 1981 PRESTO TOYOKAWA 04/0525Z TENFLARE 1500 FLUX UNITS 04/0501Z
04 APRIL 1981 PRESTO BOULDER 04/1400Z SOFLARE X1/2B S44W85 04/0500Z DURATION 16 MINUTES
04 APRIL 1981 PRESTO BOULDER 04/1400Z SOFLARE M8/2B N16E72 04/0829Z DURATION 15 MINUTES
04 APRIL 1981 PRESTO BOULDER 04/1400Z TENFLARE 1300 FLUX UNITS 04/0502Z DURATION 04 MINUTES
07 APRIL 1981 PRESTO TOYOKAWA 07/0145Z TENFLARE 150 FLUX UNITS 07/0116Z DURATION 10 MINUTES
09 APRIL 1981 PRESTO BOULDER 09/2118Z TENFLARE 320 FLUX UNITS 09/1849Z DURATION 39 MINUTES
08 APRIL 1981 PRESTO BOULDER 08/1701Z SOFLARE M5/2B N11W03 08/1654Z DURATION 60 MINUTES
08 APRIL 1981 PRESTO BOULDER 08/1701Z TENFLARE 270 FLUX UNITS 08/1638Z DURATION 17 MINUTES
09 APRIL 1981 PRESTO BOULDER 09/2118Z TENFLARE 320 FLUX UNITS 09/1849Z DURATION 39 MINUTES
10 APRIL 1981 PRESTO BOULDER 10/1735Z SOFLARE X2/3B N07W35 10/1703Z DURATION 25 MINUTES
10 APRIL 1981 PRESTO BOULDER 10/1735Z TENFLARE 600 FLUX UNITS 10/1704Z
10 APRIL 1981 PRESTO BOULDER 10/1933Z PROTON EVENT 22 PARTICLES/CM2/SEC/STER AT GREATER THAN 10 MEV
11 APRIL 1981 PRESTO BOULDER 11/2330Z BOULDER K=6,5 FOR 12-15 Z
12 APRIL 1981 PRESTO TOYOKAWA 12/2355Z TENFLARE 100 FLUX UNITS 12/0755Z DURATION 5 MINUTES
12 APRIL 1981 PRESTO TOYOKAWA 12/2355Z TENFLARE 270 FLUX UNITS 12/2130Z DURATION 20 MINUTES
12 APRIL 1981 PRESTO TOYOKAWA 12/2355Z TENFLARE 160 FLUX UNITS 12/2216Z DURATION 5 MINUTES
13 APRIL 1981 PRESTO BOULDER 13/0100Z TENFLARE 300 FLUX UNITS 12/2133Z DURATION 67 MINUTES
13 APRIL 1981 PRESTO BOULDER 13/0100Z STRONG MAGSTORM IN PROGRESS 13/0100Z A GREATER THAN 50
14 APRIL 1981 PRESTO BOULDER 14/2355Z TENFLARE 900 FLUX UNITS 14/2329Z IN PROGRESS
15 APRIL 1981 PRESTO TOYOKAWA 15/0034Z TENFLARE 1500 Flux Units 14/2328Z IN PROGRESS
15 APRIL 1981 PRESTO SYDNEY 15/0100Z TENFLARE FLEURS 2695 MHZ 1450 FLUX UNITS MAX AT 14/2342Z TYPE II AND TYPE IV AT CULGOORA
17 APRIL 1981 PRESTO TOYOKAWA 17/0030Z TENFLARE 1700 FLUX UNITS 16/2239Z DURATION 3 MINUTES
17 APRIL 1981 PRESTO SYDNEY 17/0010Z SOFLARE 2B N09W21 16/2241Z
18 APRIL 1981 PRESTO BOULDER 18/2245Z SOFLARE X1/2B N08W46 18/2117Z DURATION 9 MINUTES
19 APRIL 1981 PRESTO BOULDER 19/0518Z MAGNETIC K=5,5 18-24Z
20 APRIL 1981 PRESTO BOULDER 20/1650Z SOFLARE X1/2B N12W79 20/1612Z DURATION 27 MINUTES
20 APRIL 1981 PRESTO BOULDER 20/1725Z TENFLARE 240 FLUX UNITS 20/1610Z DURATION 25 MINUTES
24 APRIL 1981 PRESTO SYDNEY 24/0200Z SOFLARE 2B FLARE N16W45 24/0200Z IN PROGRESS
24 APRIL 1981 PRESTO TOYOKAWA 24/0210Z TENFLARE 110 FLUX UNITS 24/0137Z IN PROGRESS
24 APRIL 1981 PRESTO BOULDER 24/1511Z SOFLARE X5/2B N14W49 24/1343Z DURATION 118 MINUTES
24 APRIL 1981 PRESTO BOULDER 24/1511Z TENFLARE 750 FLUX UNITS 24/1343Z DURATION 37 MINUTES
24 APRIL 1981 PRESTO BOULDER 24/0215Z SOFLARE X9/2B N16W42 24/0118Z DURATION 28 MINUTES
24 APRIL 1981 PRESTO MEUDON 24/1445Z MAJOR FLARE MEUDON N14W52 TYPE IV NANCAY START 24/1354Z IN PROGRESS
24 APRIL 1981 PRESTO BOULDER 24/1841Z PCA BEGAN 24/1745Z 2.3 DB ABSORTION AT 1800Z
PROTON EVENT BEGAN 24/1450Z 44 PROTONS/CM2/SEC/STER/ AT GREATER THAN 10 MEV
26 APRIL 1981 PRESTO BOULDER 26/1416Z TENFLARE 510 FLUX UNITS 26/0716Z DURATION 16 MINUTES
SOFLARE X1/2B N12W74 26/1045Z DURATION 126 MINUTES
TENFLARE 8962 FLUX UNITS 26/1045Z DURATION 106 MINUTES
26 APRIL 1981 PRESTO BOULDER 26/1630Z STRONG MAGSTORM IN PROGRESS
27 APRIL 1981 PRESTO TOYOKAWA 27/0827Z TENFLARE 5150 FLUX UNITS 27/0739Z IN PROGRESS
27 APRIL 1981 PRESTO MOSCOW 27/0900Z TENFLARE 2550 FLUX UNITS AT 3000 MHZ DURATION 70 MINUTES
27 APRIL 1981 PRESTO MEUDON 27/0925Z TYPE IV NANCAY START 27/0800Z IN PROGRESS AT 0845Z
27 APRIL 1981 PRESTO BOULDER 27/1322Z SOFLARE X5/NO OPTICAL NW LIMB 27/1720Z
27 APRIL 1981 PRESTO BOULDER 27/1322Z TENFLARE 3900 FLUX UNITS 27/0720Z DURATION 120 MINUTES
27 APRIL 1981 PRESTO BOULDER 27/2340Z TENFLARE 2000 FLUX UNITS 27/2300Z IN PROGRESS
27 APRIL 1981 PRESTO SYDNEY 27/2315Z FLEURS TENFLARE 1400 FLUX UNITS START 2251Z MAZ 2255Z IN PROGRESS
28 APRIL 1981 PRESTO TOYOKAWA 28/0016Z TENFLARE 3300 FLUX UNITS 27/2252Z DURATION 40 MINUTES
28 APRIL 1981 PRESTO BOULDER 28/2202Z SOFLARE X1/NO OPTICAL WEST LIMB 28/2054Z IN PROGRESS
28 APRIL 1981 PRESTO BOULDER 28/2203Z TENFLARE 640 FLUX UNITS 28/2104Z DURATION 40 MINUTES
28 APRIL 1981 PRESTO SYDNEY 28/2240Z TENFLARE IN PROGRESS 655 FLUX UNITS 28/2117Z ALSO TYPE II CULGOORA
29 APRIL 1981 PRESTO TOYOKAWA 29/0003Z TENFLARE 700 FLUX UNITS 28/2103Z DURATION 140 MINUTES

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Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
091	01	31	207	219	017	S16W71	0	0	0		01	S16W71	Q	SOLNIL
						S43W51	9	0	0			S43W51	E	MAGALERT MINOR 01/02
						N21W49	3	0	0			N21W49	Q	
						S11W21	0	0	0			S11W21	Q	
						N17E03	0	0	0			N17E03	Q	
						N17E05	0	0	0			N17E05	Q	
						N25E25	0	0	0			N25E25	Q	
						N05E28	2	0	0			N05E28	Q	
						N14E29	3	0	0			N14E29	Q	
						N11E36	0	0	0			N11E36	Q	
						S03E36	0	0	0			S03E36	Q	
						N18E61	0	0	0			N18E61	Q	
						S14E72	0	0	0			S14E72	Q	
						N08E80	0	0	0			N08E80	Q	
092	02	01	232	228	022	S13W81	0	0	0	Presto Boulder	02	S13W81	Q	SOLALERT 02/04
						N24W62	0	0	0	01/0142Z Soflare		N24W62	Q	MAGALERT 04
						S43W61	2	0	1	X2/2B S43W52		S43W61	A	
						N12W56	0	0	0	01/0117Z In Progess		N12W56	Q	
						S10W32	0	0	0	Presto Toyokawa		S10W32	Q	
						N18W04	0	0	0	01/0220Z Tenflare		N18W04	Q	THE SIDC MEAN SUNSPOT NUMBER RI FOR
						S10E07	0	0	0	2400 Flux Units		S10E07	Q	MARCH 1981 IS 133.8
						N26E13	0	0	0	01/0107Z In Progress		N26E13	Q	
						N13E15	0	0	0	High Energy Particles		N13E15	Q	
						N05E17	1	0	0	reach earth at about		N05E17	Q	
						N10E23	0	0	0	01/0400Z but did not		N10E23	Q	
						S03E24	0	0	0	reach 10P/Cm2/sec/		S03E24	Q	
						N18E47	1	0	0	ster at greater than		N18E47	Q	
						S16E62	0	0	0	10 MEV.		S16E62	Q	
						N06E64	0	0	0			N06E64	Q	
093	03	02	253	213	008	S15W94	0	0	0	Presto Boulder	03	S15W94	Q	SOLALERT 03/XX
						N23W77	1	0	0	02/1400Z Soflare		N23W77	Q	MAGALERT 03/XX
						S42W75	3	1	1	X2/1B 02/1059Z		S42W75	A	
						N14W71	1	0	0	S43W68 Duration 22		N14W71	Q	
						S10W47	0	0	0	Minutes. Presto		S10W47	Q	
						N18W19	0	0	0	Boulder 02/2053Z		N18W19	Q	
						N17W18	0	0	0	Soflare C7/2B		N17W18	Q	
						S09W07	0	0	0	02/1926Z S43W65		S09W07	Q	
						N26W01	0	0	0	Duration 65 Minutes		N26W01	Q	
						N10E00	1	0	0			N10E00	Q	
						N05E02	0	0	0			N05E02	Q	
						N11E08	0	0	0			N11E08	Q	
						S03E09	0	0	0			S03E09	Q	
						N18E34	1	0	0			N18E34	Q	
						N06E50	1	0	0			N06E50	Q	
						S16E46	1	0	0			S16E46	Q	
						N10E65	1	0	0			N10E65	Q	
094	04	03	235	221	012	N23W89	0	0	0	Presto Sydney	04	N23W89	Q	SOLALERT 04/XX
						S43W87	8	4	0	Sudden Commencement		S43W87	A	MAGALERT 04/XX
						N10W84	0	0	0	03/0347Z 30 Gammas		N10W84	Q	
						S11W59	0	0	0	Presto Boulder		S11W59	Q	
						N18W30	0	0	0	Soflare M8/2B S43W82		N18W30	Q	
						S10W19	0	0	0	03/0908Z Duration		S10W19	Q	
						N25W13	0	0	0	56 Minutes. Tenflare		N25W13	Q	
						N04W10	0	0	0	03/0936Z 500 Flux		N04W10	Q	
						N12W12	0	0	0	Units Duration 29		N12W12	Q	
						S04W03	0	0	0	Minutes.		S04W03	Q	
						N18E24	0	0	0	Presto Kakioka		N18E24	Q	
						S16E36	0	0	0	Magstorm 03/0348Z		S16E36	Q	
						N06E39	4	1	0			N06E39	E	
						N09E55	0	0	0			N09E55	Q	
						N06E66	0	0	0			N06E66	Q	
						N17E78	0	0	0			N17E78	Q	
095	05	04	227	220	010	S11W73	0	0	0	Presto Boulder	05	S11W73	Q	SOLALERT 04/XX
						N23W71	0	0	0	Soflare X1/2B S44		N23W71	Q	MAGNIL
						N18W42	1	0	0	W85 04/0505Z Dur-		N18W42	Q	
						N26W27	0	0	0	ation 16 Minutes.		N26W27	Q	
						N13W24	1	0	0	Presto Boulder		N13W24	Q	
						S03W16	0	0	0	Tenflare 1300 Flux		S03W16	Q	
						S05W06	0	0	0	Units 04/0502Z Dura-		S05W06	Q	
						N18E09	2	0	0	tion 4 Minutes.		N18E09	Q	
						S15E21	3	0	0	Presto Toyokawa		S15E21	Q	
						N26E24	0	0	0	Tenflare 1500 Flux		N26E24	Q	
						N05E25	2	1	0	Units 04/0501Z		N05E25	E	
						N08E41	1	0	0	Duration 6 Minutes.		N08E41	Q	
						N09E55	0	0	0	Presto Toyokawa		N09E55	Q	
						N18E66	6	2	0	Tenflare 110 Flux		N18E66	A	
										Units 04/0827Z				
										Duration 23 Minutes				
										Presto Boulder				
										Soflare M8/2B				
										N16E72 04/0829Z				
										Duration 15 Minutes				
096	06	05	255	226	005	S12W86	1	0	0		06	S12W86	Q	SOLALERT 06/XX
						N18W57	0	0	0			N18W57	Q	MAGQUIET
						N04W42	0	0	0			N04W42	Q	
						N13W39	2	0	0			N13W39	Q	

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						S04W25	0	0	0			S04W25	Q	
						S13W16	0	0	0			S13W16	Q	
						N18E03	0	0	0			N18E03	Q	
						S18E06	2	0	0			S18E06	Q	
						N05E10	9	0	0			N05E10	E	
						N27E11	0	0	0			N27E11	Q	
						N08E15	0	0	0			N08E15	Q	
						N09E29	2	0	0			N09E29	Q	
						N09E41	0	0	0			N09E41	Q	
						N19E55	5	0	0			N19E55	A	
						S08E65	0	0	0			S08E65	Q	
097	07	06	230	235	010	N18W68	0	0	0		07	N18W68	Q	SOLALERT 07/XX
						N14W51	0	0	0			N14W51	Q	MAGQUIET
						S05W35	2	0	0			S05W35	Q	
						N18W15	0	0	0			N18W15	Q	
						S18W09	1	0	0			S18W09	Q	
						N04W04	1	0	0			N04W04	E	
						N07E06	0	0	0			N07E06	Q	
						N09E15	0	0	0			N09E15	Q	
						N09E27	0	0	0			N09E27	Q	
						N19E42	4	0	0			N19E42	A	
						S08E56	0	0	0			S08E56	Q	
098	08	07	218	242	010	S05W48	0	0	0	Presto Toyokawa	08	S05W48	Q	SOLALERT 08/09
						N18W28	0	0	0	07/0145Z Tenflare		N18W28	Q	MAGQUIET
						N05W18	1	0	0	150 Flux Units 07/		N05W18	Q	
						N12W14	0	0	0	0116Z Duration 10		N12W14	Q	
						S20W12	0	0	0	Minutes.		S20W12	Q	
						N07W07	0	0	0			N07W07	Q	
						N08E00	1	1	0			N08E00	Q	
						N09E14	6	0	0			N09E14	E	
						N19E29	3	1	0			N19E29	A	
						N20E68	1	0	0			N20E68	Q	
						N13E85	0	0	0			N13E85	Q	
099	09	08	212	226	011	S06W61	0	0	0	Presto Boulder	09	S06W61	Q	SOLALERT 09/XX
						N19W42	0	0	0	08/1701Z Soflare		N19W42	Q	MAGQUIET
						S14W35	1	0	0	M5/2B N11W03 08/		S14W35	Q	
						N05W31	6	0	0	1654Z Duration 60		N05W31	E	
						N08W15	5	2	0	Minutes. Tenflare		N08W15	E	
						N09E01	7	0	0	270 Flux Units 08/		N09E01	E	
						N19E17	1	0	0	1638Z Duration 17		N19E17	A	
						N20E55	0	0	0	Minutes.		N20E55	E	
						S15E67	12	2	0			S15E67	E	
100	10	09	252	273	012	S06W73	0	0	0	Presto Boulder	10	S06W73	Q	SOLALERT 10/12
						N18W54	1	0	0	09/2118Z Tenflare		N18W54	Q	MAGQUIET
						N05W46	4	0	0	320 Flux Units 09/		N05W46	E	
						N08W28	7	0	0	1849Z Duration 39		N08W28	A	
						N08W12	5	0	0	Minutes.		N08W12	E	
						N19E01	10	1	0			N19E01	E	
						N09E04	0	0	0			N09E04	Q	
						N20E42	0	0	0			N20E42	Q	
						N13E55	9	1	0			N13E55	A	
						N08E73	2	0	0			N08E73	Q	
						S06E73	0	0	0			S06E73	Q	
101	11	10	295	276	008	N19W69	0	0	0	Presto Boulder	11	N19W69	Q	SOLALERT 11/13
						N05W60	3	0	0	10/1735Z Soflare		N05W60	E	MAGQUIET
						N08W45	0	0	0	X2/3B N07W35 10/		N08W45	Q	
						N09W40	10	1	1	1703Z Duration 25		N09W40	Q	
						N08W27	6	0	0	Minutes. Tenflare		N08W27	E	
						N16W27	0	0	0	600 Flux Units.		N16W27	Q	
						N18W10	4	0	0	10/1933Z Proton		N18W10	Q	
						S08W01	0	0	0	Event 22 P/CM2/SEC/		S08W01	Q	
						N20E28	0	0	0	STER At Greater		N20E28	Q	
						N14E43	12	1	1	Than 10 MEV 10/1930Z		N14E43	A	
						N08E59	1	0	0			N08E59	A	
						S07E59	1	0	0			S07E59	Q	
102	12	11	276	271	029	N18W82	0	0	0	Presto Boulder	12	N18W82	Q	SOLALERT 12/14
						N04W73	3	0	0	11/2330Z Boulder		N04W73	E	MAGALERT 12/13
						N17W64	0	0	0	K=6,5 for 12-18Z		N17W64	Q	
						N07W61	0	0	0			N07W61	Q	
						N09W52	4	1	0			N09W52	A	
						N15W43	0	0	0			N15W43	Q	
						N07W42	5	0	0			N07W42	A	
						N18W23	6	1	0			N18W23	A	
						S10E12	0	0	0			S10E12	Q	
						N20E15	0	0	0			N20E15	Q	
						N14E30	10	2	0			N14E30	A	
						N09E45	2	1	0			N09E45	A	
						S07E45	0	0	0			S07E45	Q	
103	13	12	293	251	055	N17W97	0	0	0	Presto Toyokawa	13	N17W97	Q	SOLALERT 13/16
						N04W86	0	0	0	12/2355Z Tenflare		N04W86	E	MAGALERT 13/14
						N14W79	0	0	0	100 Flux Units 0755Z		N14W79	Q	
						N09W66	4	0	0	270 Flux Units 2130Z		N09W66	A	
						N16W56	0	0	0	160 Flux Units 2216Z		N16W56	Q	

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						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
						N07W55	4	0	0	Presto Toyokawa		N07W55	A	
						N18W38	10	1	0	12/2355Z Tenflare		N18W38	A	
						S11W26	0	0	0	300 Flux Units 2133		S11W26	Q	
						S10W02	0	0	0	Presto Boulder		S10W02	Q	
						N21E04	1	0	0	13/0100Z Strong		N21E04	Q	
						N13E17	14	5	0	Magstorm in Progress		N13E17	A	
						S04E17	0	0	0	A greater than 50		S04E17	Q	
						N09E31	1	0	0			N09E31	E	
						S06E33	0	0	0			S06E33	Q	
						S06E61	0	0	0			S06E61	Q	
						N24E75	0	0	0			N24E75	Q	
104	14	13	264	257	105	N09W80	1	0	0		14	N09W80	E	SOLALERT 14/16
						N16W70	0	0	0			N16W70	Q	MAGALERT 14/16
						N07W69	2	0	0			N07W69	A	
						N18W52	3	1	0			N18W52	A	
						N21W11	1	0	0			N21W11	E	
						N14E04	9	0	0			N14E04	P	
						S04E04	0	0	0			S04E04	Q	
						S04E17	0	0	0			S04E17	Q	
						N10E17	2	0	0			N10E17	E	
						S07E45	4	0	0			S07E45	Q	
						N24E60	0	0	0			N24E60	Q	
105	15	14	293	258	019	N10W88	0	0	0	Presto Boulder	15	N10W88	Q	SOLALERT 15/16
						N16W83	0	0	0	14/2355Z Tenflare		N16W83	Q	MAGALERT 15/17
						N09W78	0	0	0	900 Flux Units		N09W78	E	
						N19W66	4	0	0	14/2329Z in Progress		N19W66	A	
						N25W23	0	0	0			N25W23	Q	
						S04W10	0	0	0			S04W10	Q	
						N14W08	5	0	0			N14W08	A	
						N10E04	1	0	0			N10E04	A	
						S05E04	0	0	0			S05E04	Q	
						S29E04	0	0	0			S29E04	Q	
						S08E30	1	0	0			S08E30	E	
						N23E50	1	0	0			N23E50	Q	
						N16E52	1	0	0			N16E52	Q	
						N22E74	0	0	0			N22E74	Q	
						N13E75	0	0	0			N13E75	Q	
						S11E75	0	0	0			S11E75	Q	
106	16	15	257	257	011	N21W82	9	2	0	Presto Toyokawa	16	N21W82	A	SOLALERT 16/17
						S04W26	0	0	0	15/0034Z Tenflare		S04W26	Q	MAGALERT MINOR 16
						N14W22	1	0	0	1500 Flux Units		N14W22	A	
						S05W10	0	0	0	14/2328Z In Progress		S05W10	Q	
						N09W09	5	0	0			N09W09	A	
						S31W09	0	0	0			S31W09	Q	
						N13E04	0	0	0			N13E04	Q	
						S09E17	1	0	0			S09E17	E	
						N22E36	1	0	0			N22E36	E	
						N16E37	0	0	0			N16E37	Q	
						N13E59	2	0	0			N13E59	A	
						S12E63	0	0	0			S12E63	Q	
						N23E64	0	0	0			N23E64	Q	
107	17	16	295	248	011	N20W95	1	0	0	Presto Toyokawa	17	N20W95	A	SOLALERT
						S05W39	0	0	0	17/0030Z Tenflare		S05W39	Q	MAGALERT MINOR 17/18
						N14W34	8	1	0	1700 Flux Units		N14W34	A	
						S04W25	1	0	0	16/2239Z Duration		S04W25	Q	
						N10W22	5	3	0	3 Minutes. Presto		N10W22	A	
						N15W10	2	0	0	Sydney Soflare 2B		N15W10	Q	
						N25W08	0	0	0	N09W21 16/2241Z		N25W08	Q	
						N12W02	0	0	0	Sent 17/0010Z		N12W02	Q	
						S07E06	2	0	0			S07E06	Q	
						N23E23	2	0	0			N23E23	Q	
						N18E25	3	0	0			N18E25	Q	
						N14E47	1	0	0			N14E47	A	
						N24E50	0	0	0			N24E50	Q	
						S10E51	1	0	0			S10E51	Q	
108	18	17	365	241	016	S04W51	0	0	0		18	S04W51	Q	SOLALERT 18/XX
						N15W48	4	1	0			N15W48	A	MAGALERT MINOR 18/19
						S03W39	1	0	0			S03W39	Q	
						N10W36	2	0	0			N10W36	A	
						N19W32	0	0	0			N19W32	Q	
						N16W23	2	0	0			N16W23	Q	
						N26W21	0	0	0			N26W21	Q	
						S23W19	0	0	0			S23W19	Q	
						S06W09	2	0	0			S06W09	E	
						S15W05	0	0	0			S15W05	Q	
						N23E08	0	0	0			N23E08	Q	
						N18E10	0	0	0			N18E10	Q	
						S06E14	0	0	0			S06E14	Q	
						N15E33	1	1	0			N15E33	A	
						N25E37	2	0	0			N25E37	E	
						S09E38	0	0	0			S09E38	Q	
109	19	18	313	227	013	N15W59	4	0	0	Presto Boulder	19	N15W59	A	SOLALERT
						S04W54	0	0	0	18/2245Z Soflare		S04W54	Q	MAGALERT 19/20
						N11W49	7	4	1	X1/2B N08W46		N11W49	A	

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						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
						N18W46	0	0	0	18/2117Z DURATION		N18W46	Q	
						N13W36	3	0	0	9 MINUTES		N13W36	Q	
						N25W33	0	0	0			N25W33	Q	
						S06W22	2	0	0			S06W22	E	
						S15W21	0	0	0			S15W21	Q	
						N23W06	2	0	0			N23W06	Q	
						N18W01	1	0	0			N18W01	Q	
						N09E14	0	0	0			N09E14	Q	
						N13E21	2	0	0			N13E21	A	
						N22E24	0	0	0			N22E24	E	
						S11E24	0	0	0			S11E24	Q	
110	20	19	312	215	029	N15W73	4	0	0	Presto Boulder	20	N15W73	A	SOLALERT 20/XX
						S04W69	1	0	0	19/0518Z K=5,5		S04W69	Q	MAGALERT 20
						N10W63	8	4	0	18-24Z		N10W63	A	
						N18W60	1	0	0			N18W60	Q	
						N15W50	0	0	0			N15W50	Q	
						N25W49	4	0	0			N25W49	E	
						S07W35	6	0	0			S07W35	E	
						N24W20	4	0	0			N24W20	Q	
						N19W15	1	0	0			N19W15	Q	
						N12W06	0	0	0			N12W06	Q	
						N08E00	2	0	0			N08E00	Q	
						N15E05	0	0	0			N15E05	A	
						N25E10	4	0	0			N25E10	E	
						S09E12	1	0	0			S09E12	Q	
						S42E76	0	0	0			S42E76	Q	
111	21	20	305	199	036	N14W87	1	0	1	Presto Boulder	21	N14W87	A	SOLALERT 21/22
						S04W81	0	0	0	20/1650Z Soflare		S04W81	Q	MAGALERT 21
						N10W76	3	0	0	X1/2B N12W79		N10W76	A	
						N18W74	0	0	0	20/1612Z Duration		N18W74	Q	
						N14W64	0	0	0	27 Minutes. Presto		N14W64	Q	
						N25W60	0	0	0	Boulder 20/1725Z		N25W60	Q	
						S07W48	4	0	0	Tenflare 240 Flux		S07W48	E	
						N23W32	1	0	0	Units 20/1610Z		N23W32	Q	
						N18W27	1	0	0	Duration 25 Minutes		N18W27	E	
						N12W19	1	0	0			N12W19	Q	
						N08W11	0	0	0			N08W11	Q	
						N15W07	4	0	0			N15W07	A	
						N25W01	0	0	0			N25W01	E	
						S10E00	0	0	0			S10E00	Q	
						S41E64	0	0	0			S41E64	Q	
112	22	21	258	194	026	N10W90	1	0	0		22	N10W90	A	SOLALERT 22
						N18W85	0	0	0			N18W85	Q	MAGNIL
						N14W80	1	0	0			N14W80	Q	
						N25W73	1	0	0			N25W73	Q	
						S07W61	0	0	0			S07W61	E	
						N23W45	1	0	0			N23W45	Q	
						N18W41	0	0	0			N18W41	E	
						N12W33	0	0	0			N12W33	Q	
						N08W24	0	0	0			N08W24	Q	
						N14W18	5	0	0			N14W18	Q	
						N25W11	2	0	0			N25W11	Q	
						S11W11	0	0	0			S11W11	Q	
						S14E08	0	0	0			S14E08	Q	
						S42E54	0	0	0			S42E54	Q	
113	23	22	206	189	029	N13W93	0	0	0		23	N13W93	Q	SOLALERT 23
						N25W85	0	0	0			N25W85	Q	MAGQUIET
						S07W76	1	0	0			S07W76	E	
						N24W62	0	0	0			N24W62	Q	
						N18W55	1	0	0			N18W55	Q	
						N11W48	0	0	0			N11W48	Q	
						N08W37	1	0	0			N08W37	Q	
						N15W31	8	1	0			N15W31	A	
						S10W26	0	0	0			S10W26	Q	
						N25W25	1	0	0			N25W25	Q	
						S14W06	0	0	0			S14W06	Q	
						S42E41	1	0	0			S42E41	Q	
						N19E51	0	0	0			N19E51	Q	
114	24	23	177	203	023	N23W74	0	0	0		24	N23W74	Q	SOLALERT 24/25
						N18W68	0	0	0			N18W68	Q	MAGALERT 24/25
						N09W52	0	0	0			N09W52	Q	
						N15W43	4	0	0			N15W43	A	
						S09W41	0	0	0			S09W41	Q	
						N25W39	1	0	0			N25W39	Q	
						N12W03	0	0	0			N12W03	Q	
						S14E10	0	0	0			S14E10	Q	
						N14E74	0	0	0			N14E74	Q	
						S01E75	0	0	0			S01E75	Q	
115	25	24	159	222	019	N09W67	1	0	0	Presto Boulder	25	N09W67	Q	SOLALERT 25/26
						N15W58	11	1	2	24/0215Z Soflare		N15W58	A	MAGALERT 25/26
						S11W55	1	0	0	X1/2B N16W42 24/		S11W55	Q	
						N25W50	2	0	0	0118Z Duration 28		N25W50	Q	
						N12W19	0	0	0	Minutes.		N12W19	Q	
						S14W13	0	0	0			S14W13	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

APRIL 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
						N18W04	1	0	0	Presto Toyokawa		N18W04	Q	
						S43E16	1	0	0	24/0210Z Tenflare		S43E16	Q	
						N16E62	1	0	0	110 Flux Units In		N16E62	E	
						N02E68	3	0	0	Progress 24/0137Z Presto Meudon 24/ 1445Z Major Flare Meudon N14W52 Type IV Nancay Start 24/1354Z Presto Boulder 24/1841Z PCA Began 24/1745Z 2.3 db Absorption at 1800Z Proton Event began 24/1450Z 44 Protons cm2/sec/ster at greater than 10MEV Presto Boulder 24/ 1647Z Soflare X5/2B N15W49Z 24/1343Z Duration 118 Min. Tenflare 750 Flux Units 24/1343Z Duration 37 Min.		N02E68	Q	
116	26	25	183	210	015	N10W81	0	0	0		26	N10W81	Q	SOLALERT 26/27
						N16W70	8	2	0			N16W70	E	MAGALERT 26/27
						S09W68	1	0	0			S09W68	Q	
						N24W62	1	0	0			N24W62	Q	
						S15W53	0	0	0			S15W53	Q	
						S13W26	0	0	0			S13W26	Q	
						N18W16	0	0	0			N18W16	Q	
						S42E04	0	0	0			S42E04	Q	
						N10W13	0	0	0			N10E13	Q	
						N15E49	0	0	0			N15E49	E	
						N02E55	1	0	0			N02E55	E	
117	27	26	175	196	038	N16W84	6	2	1	Presto Boulder 26/	27	N16W84	A	SOLALERT 27
						S09W79	0	0	0	1416Z Tenflare 510		S09W79	Q	MAGALERT 27
						N24W76	0	0	0	Flux Units 26/0716Z		N24W76	E	
						N18W30	0	0	0	Duration 16 Minutes		N18W30	Q	
						S42W08	0	0	0	Soflare X1/2B N12		S42W08	Q	
						N12E01	0	0	0	W74 26/1045Z Dura-		N12E01	Q	
						S08E11	0	0	0	tion 126 Minutes		S08E11	Q	
						N16E35	2	0	0	Tenflare 8962 Flux		N16E35	E	
						N02E41	9	2	0	Units 26/1045Z Dura- tion 106 Minutes Presto Boulder 26/ 1630Z Strong Mag- storm in Progress		N02E41	A	
118	28	27	113	196	036	N18W43	0	0	0	Presto Toyokawa 27/	28	N18W43	Q	SOLALERT 28
						N16E24	1	0	0	0827Z Tenflare 5150		N16E24	Q	MAGALERT 28
						N03E29	0	0	0	Flux Units 27/0739Z		N03E29	A	
						S14E32	0	0	0	In ProgressPresto		S14E32	Q	
						N04E69	0	0	0	Moscow 27/0900Z Ten-		N04E69	Q	
						N20E71	0	0	0	flare 2550 Flux Units at 3000MHZ Duration 70 Minutes Presto Meudon 27/ 0925Z Type IV Nancay Start 27/0804Z In Progress 0845Z Presto Boulder 27/ 1322Z Soflare X5/No Optical NW Limb 27/ 0720Z. Tenflare 3900 Flux Units 27/ 0720Z Duration 120 Minutes. Presto Boulder 27/2340Z Tenflare 2000 Flux Units 27/2300Z In Progress.		N20E71	Q	
119	29	28	141	172	017	N04W57	0	0	0	Presto Toyokawa 28/	29	N04W57	Q	SOLALERT MINOR 29
						N15E09	1	0	0	0016Z Tenflare 3300		N15E09	Q	MAGALERT 29
						N26E12	0	0	0	Flux Units 27/2252Z		N26E12	Q	
						N02E14	4	0	0	Duration 40 Minutes		N02E14	E	
						S15E22	0	0	0	Presto Boulder 28/		S15E22	Q	
						S41W35	0	0	0	2202Z Soflare X1/No		S41E35	Q	
						N04E55	0	0	0	Optical WL 28/2054Z		N04E55	Q	
						N20E58	0	0	0	In Progress.Presto Boulder 28/2203Z Tenflare 640 Flux Units 28/2104Z Dura- tion 40 Minutes		N20E58	Q	
120	30	29	153	174	022	N05W71	0	0	0	Presto Toyokawa 29/	30	N05W71	Q	SOLNIL
						N16W05	0	0	0	0003Z Tenflare 700		N16W05	Q	MAGNIL
						N26W02	0	0	0	Flux Units 28/2103Z		N26W02	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

APRIL 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location	No. of Flares				Date	Location	Desc*	
						Lat-Long	Total	M	X			Lat-Long		
						N03E02	1	0	0	Duration 140 Minutes		N03E02	E	
						S14E08	1	0	0			S14E08	Q	
						N04E41	0	0	0			N04E41	Q	
						N21E44	0	0	0			N21E44	Q	
						S08E52	2	0	0			S08E52	Q	
						N08E65	0	0	0			N08E65	Q	
						N16E74	3	0	0			N16E74	Q	
121	01	30	161	173	008	N07W83	0	0	0		01	N07W83	Q	SOLQUIET
						N16W18	0	0	0			N16W18	Q	MAGQUIET
						N26W15	0	0	0			N26W15	Q	
						N18W13	0	0	0			N18W13	Q	
						N03W10	1	0	0			N03W10	E	
						N14E28	0	0	0			N14E28	Q	
						N20E31	0	0	0			N20E31	Q	
						S08E38	0	0	0			S08E38	Q	
						N07E52	0	0	0			N07E52	Q	
						N16E59	4	0	0			N16E59	E	
						N04E65	0	0	0			N04E65	Q	

A=Active C=Caution D=Doubtful E=Eruptive MF=Major Flare OG=Other Groups P=Proton Q=Quiet

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

	1980 FINAL								1981 PROVISIONAL*			
DAY	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	121	152	101	78	200	151	188	171	147	148	147	132
2	149	124	108	63	226	135	210	176	141	132	182	170
3	140	128	97	65	232	139	204	152	122	154	169	148
4	166	141	83	65	233	121	217	146	113	126	183	151
5	192	150	96	53	188	96	201	131	94	133	141	157
6	145	131	98	72	179	116	196	126	71	172	138	132
7	147	149	97	64	136	135	175	108	89	158	130	152
8	157	150	87	90	140	173	201	124	115	129	142	195
9	160	164	84	125	108	186	158	117	126	124	124	199
10	144	177	86	130	119	235	158	145	120	157	127	199
11	142	172	87	101	125	260	144	148	123	170	130	200
12	143	166	98	174	120	256	120	170	126	185	120	193
13	150	161	105	172	133	213	103	105	123	153	127	197
14	166	136	120	193	100	232	100	213	106	142	120	188
15	140	129	161	192	83	224	105	217	106	124	110	212
16	140	134	190	196	90	202	112	237	81	129	120	197
17	173	129	211	190	93	150	109	190	72	120	109	213
18	215	146	241	195	114	142	113	183	79	131	95	214
19	210	166	220	185	137	137	125	166	78	130	86	203
20	230	179	227	179	150	167	112	171	80	133	120	199
21	233	191	229	152	134	155	107	170	105	142	135	170
22	244	196	201	139	147	164	119	170	99	136	134	122
23	246	190	184	154	150	140	112	177	115	90	121	100
24	256	193	155	122	170	127	120	191	120	124	125	92
25	229	179	151	109	160	110	127	200	115	137	142	119
26	220	166	130	101	209	119	140	200	120	169	133	90
27	223	105	117	90	231	134	160	206	115	175	126	73
28	190	100	127	124	101	136	167	206	142	170	135	72
29	105	149	110	150	166	173	140	200	165		160	106
30	150	97	100	104	149	104	153	107	174		104	92
31	130		01	194		170		102	159		100	
MEAN	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4	114.4	143.5	133.0	156.2

1980 YEARLY MEAN = 154.6

*ZURICH R_z SUNSPOT NUMBER REPLACED BY INTERNATIONAL R_I SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1980								1981			
DAY	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	218.5	191.2	160.0*	131.9	213.2*	171.1	226.3	223.0	189.7	207.3	224.4*	210.0*
2	223.0	184.0	154.9	131.0	224.5*	167.9*	234.2	213.3	181.4	210.1	230.6*	211.2*
3	221.2	170.0	147.7	133.2	232.1	174.1	241.6	197.9	173.1	205.4*	230.9*	221.2
4	223.1*	181.5	146.7	130.9	225.1	175.2	249.9*	199.4	166.0	197.5	245.6*	219.7
5	221.9	170.4	152.5*	132.6	215.6*	102.6	263.3*	106.4	161.0	107.0	227.3	226.2
6	203.5	172.4	150.1	143.2*	210.9	105.3*	273.9*	171.0	157.4	105.4*	212.7	235.7
7	203.4	165.7*	152.5	142.3	213.0	100.7*	272.7	176.4	160.6*	100.5*	201.4	242.3
8	200.2*	172.4*	152.0	146.4	200.9	212.1*	266.2*	169.3	169.2	179.1	200.6*	260.0*
9	193.6	174.3*	155.2	156.5	109.7	223.4*	255.4*	175.1	167.0	176.7	202.9	207.7
10	191.1	176.1	162.3*	173.5	100.7	232.7	257.2*	100.5	164.6	105.2	203.1	260.0*
11	191.4*	102.9	173.3	104.1	100.1	240.7	256.0*	203.5*	160.5	106.4*	199.7	272.1
12	109.5	109.3*	170.0	109.6	170.9	247.0*	233.2*	240.5*	156.6	190.6*	100.0	251.9
13	192.9	106.5	196.0	193.3*	171.9	253.3*	226.0	244.2	150.1	197.0	202.1	254.9*
14	202.9	100.0*	209.7	191.7*	163.4	251.1	210.0*	253.2	153.9	200.3	200.9	256.5*
15	199.0	106.4	210.4	191.9	153.0	237.0	205.2*	266.2	149.0	193.5	206.3*	254.9*
16	202.9*	193.3	235.4*	195.7	159.6	214.9	191.1	273.0	152.5	106.9	194.9	247.5*
17	207.5*	197.4	250.2*	197.7*	150.0	201.1	101.6*	254.0	155.3	100.1*	101.5	242.7
10	214.3*	207.6	249.0*	204.3*	154.4	200.6	174.9	255.1	161.0	190.2*	100.0	229.2
19	234.2	219.0*	255.2*	201.4	100.1*	203.3	172.4	230.5	165.4	170.0	175.1	214.9
20	244.7*	227.9*	250.0	193.0	107.5	200.5	101.6	235.9*	159.9*	100.3	102.7	200.9*
21	252.6	220.0	254.0	194.1	159.6	204.2	101.0	224.0	156.6	109.9*	109.5	196.1
22	276.6	250.0*	240.7	170.3*	170.6	205.3*	171.4	231.2	156.4	199.5	109.4*	191.5
23	209.5	251.5	235.1	174.1	100.7*	196.1	167.2	226.0	156.0	217.9*	100.0*	204.9
24	290.2	245.9*	222.2	164.3*	191.3	192.5	174.9*	223.6	157.3	231.5*	191.4	203.0*
25	292.0	230.0*	206.4	153.0*	103.0	102.9	176.4*	220.7	169.2*	233.0	199.3	203.0*
26	204.2	226.3	197.4	154.6	104.3	100.3*	109.6	220.1	174.6	230.5	190.6*	190.0
27	201.2*	212.6	100.4	159.3	103.2*	177.2	105.3	220.3	175.0*	235.4	197.6	194.7*
20	200.0*	199.7*	169.5	160.3	105.2	170.2*	191.4	231.5*	197.2*	224.9*	203.7*	170.2*
29	252.3	100.0	155.3	170.5	170.2*	106.4	206.1<	217.2	204.2	.	212.4*	176.9
30	222.7	103.4	143.3	191.4*	174.1	201.0	216.3	209.9	209.1	.	200.2	175.3
31	200.6	.	136.5	190.7*	.	211.5	.	199.0	209.1	.	214.0*	.
MEAN	229.1	199.3	190.0	170.3	105.9	202.9	213.4	210.0	169.0	199.5	203.2	224.7

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

APRIL 1981

DAY OF MONTH	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	PROVISIONAL SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_I	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	91	16	132	185	211.0*	631	470	258	210.8*	216	181	91	35	18
2	92	17	170	177	211.4*	607	345	212	211.2*	226		100	42	18
3	93	18	148	145	221.2	617	322	206	221.2	211	174	343	36	18
4	94	19	151	168	219.5	616			219.7			111	35	21
5	95	20	157	176	226.0	608	378	232	226.2	214	173	97	34	21
6	96	21	132	149	235.2	626	394	236	235.7	225	182		36	19
7	97	22	152	181	241.8				242.3					
8	98	23	195	210	268.0*	673	482	320	268.8*	309	219		63	65
9	99	24	199	229	286.8	666	449	286	287.7	271	194		50	23
10	100	25	199	226	267.7*				268.8*					
11	101	26	200	255	270.7	619	400	273	272.1	253	183		37	18
12	102	27	193	245	250.6	632	401	246	251.9	238	180		40	23
13	103	1	197	209	253.4*	651	415	269	254.9*	251	182		39	91
14	104	2	180	210	255.0*	602	394	266	256.5*	255	172		35	27
15	105	3	212	236	253.1*				254.9*					
16	106	4	197	215	245.8*				247.5*					
17	107	5	213	273	240.8	605	373	235	242.7	229	157		33	21
18	108	6	214	219	227.2	617	358	230	229.2	218	167		37	31
19	109	7	203	254	213.0	612	347	222	214.9	218	149			29
20	110	8	199	206	198.9*	594	348	208	200.9*	194	149		42	24
21	111	9	170	138	194.2	621			196.1				32	20
22	112	10	122	116	189.4	614	358	205	191.5	183	142		41	23
23	113	11	108	92	202.7	632	395	213	204.9	195	149		39	21
24	114	12	92	112	200.6*	630	399	234	203.0*	218	171		49	25
25	115	13	119	123	201.4*				203.8*				40	32
26	116	14	90	103	196.2	617		199	198.8		142		39	23
27	117	15	73	81	192.0*	604		192	194.7*		142		39	20
28	118	16	72	86	175.7*	600	316	173	178.2*	181	140		40	21
29	119	17	106	113	174.3	579		184	176.9	173	145		39	19
30	120	18	92	112	172.7	580	327	179	175.3	167	142		29	21
MEAN			156.2	174.8	223.2	618	384	229	224.7	221	165	148	39	27

*ADJUSTED FOR BURST.
NOTE: DATA GAPS IN AFGL SAGAMORE HILL DATA ARE DUE TO EQUIPMENT PROBLEMS.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

Date	SUNSPOT NUMBERS Rz or R_I Monthly Mean	Rz or R_I Smoothed	Ra Monthly Mean	Ra Smoothed	Rs Monthly Mean	Rs Smoothed	2800 MHz FLUX adjusted to 1 AU Sa Monthly Mean	Sa Smoothed
May 78	82.7	83	79.6	78	99.7	84	149.7	135
Jun	95.1	89	88.0	84	96.5	90	146.8	141
Jul	70.4	97	58.1	92	84.2	97	135.2	147
Aug	58.1	104	48.1	98	64.3	104	116.9	153
Sep	138.2	108	128.1	103	110.4	108	159.6	158
Oct	125.1	111	116.0	105	107.7	111	157.1	160
Nov	97.9	113	92.8	107	98.1	113	148.2	162
Dec	122.7	118	121.0	111	121.6	116	170.0	165
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	155	140.5	145	123.1	145	171.4	192
Aug	142.2	155	125.1	144	129.2	145	177.0	192
Sep	188.4	156	184.0	143	156.5	144	202.3	191
Oct	186.2	158	178.2	144	171.7	145	216.4	192
Nov	183.3	162	176.5	149	182.9	149	226.8	196
Dec	176.3	164	157.6	152	151.0	152	197.2	199
Jan 80	159.6	164	145.3	153	153.6	154	199.6	200
Feb	155.0	163	133.9	154	148.7	155	195.1	200
Mar	126.2	161	107.9	153	117.8	153	166.5	200
Apr	164.1	159	138.5	151	164.0	152	209.3	198
May	179.7	156	172.3	149	185.4	151	229.1	197
Jun	157.3	155	153.6	149	153.2	151	199.3	198
Jul	136.3	153*	136.0	144	144.1	151	190.8	197
Aug	135.4	150*	133.0	144	121.9	150	170.3	196
Sep	155.0	150*	150.0	146	138.8	152	185.9	198
Oct	164.7	150*	160.8	146	157.1	154	202.9	200
Nov	147.9	150(+ 3)*	149.9	145	168.5	153	213.4	---
Dec	174.4	149(+10)*	167.5	145	174.3	153	218.8	---
Jan 81	114.4†	150(+16)*	115.4	145	120.5	153	169.0	---
Feb	143.5†	149(+17)*	143.7	144	153.5	152	199.5	---
Mar	133.8†	146(+17)*	149.2	141	157.5	149	203.2	---
Apr	156.2†	142(+18)*	---	138	180.7	146	224.7	---
May	---	140(+20)*	---	135	---	143	---	---
Jun	---	137(+21)*	---	133	---	140	---	---
Jul	---	135(+22)*	---	131	---	138	---	---
Aug	---	134(+22)*	---	130	---	137	---	---
Sep	---	133(+22)*	---	129	---	136	---	---
Oct	---	131(+23)*	---	127	---	134	---	---

*An asterisk denotes either a value of the observed 12-month running mean or the predicted 12-month average that is based on preliminary observations of the Zurich and International relative sunspot numbers (R_Z and R_I). Parentheses enclose the 90% confidence limits. Shaded boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A'. All tabulated entries of Ra are final values.

†R_I replaces R_Z as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

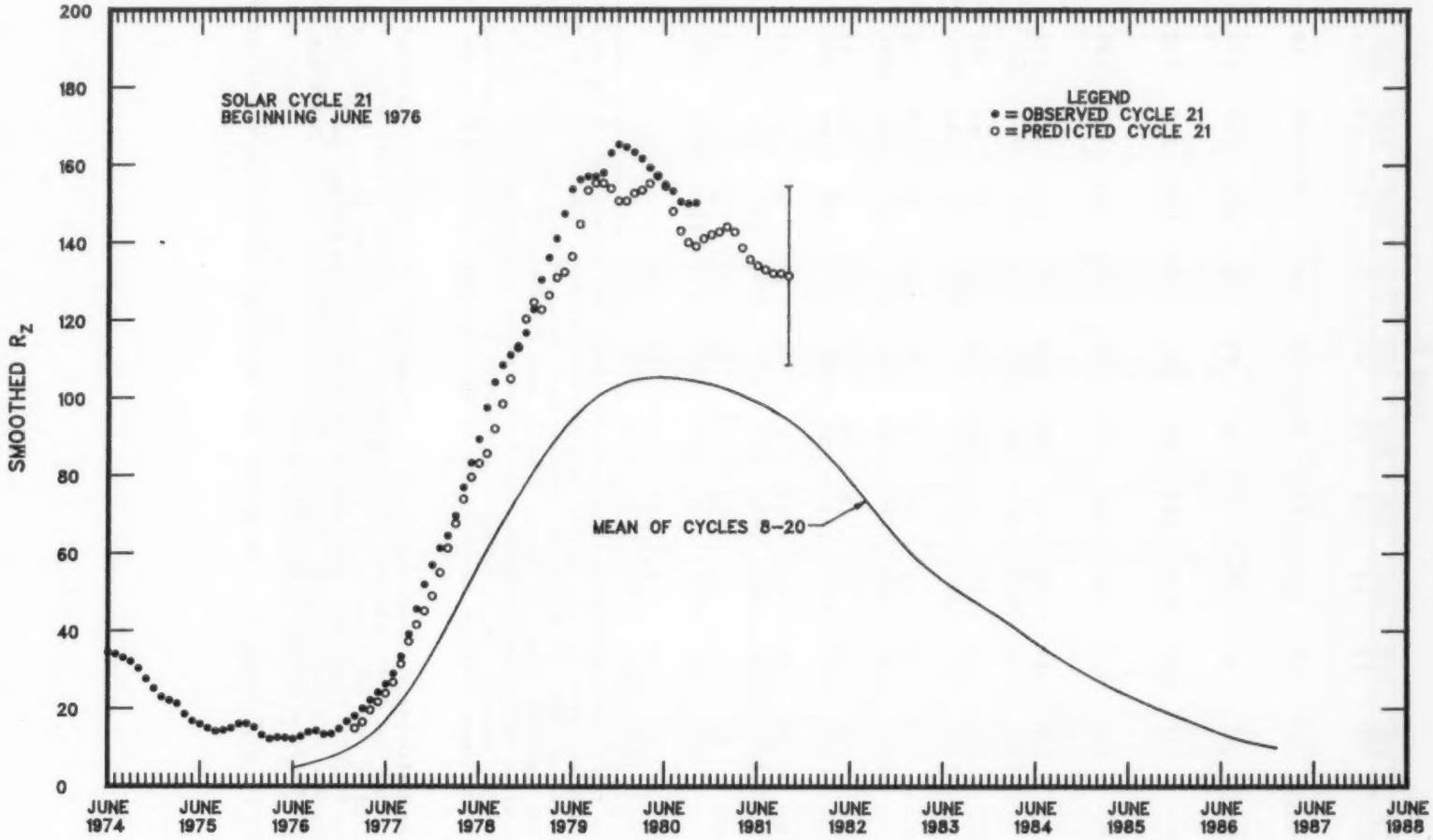
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	155	155	156	158	162	165*
1980	164	163	161	159	156	155	153	150	150	150	[150	149
											[(3)	(10)
1981	150	149	146	142	140	137	135	134	133	131	128	124
	(16)	(17)	(17)	(18)	(20)	(21)	(22)	(22)	(22)	(23)	(23)	(23)
1982	121	118	115	112	109	106	102	97	92	87	84	80
	(21)	(19)	(19)	(18)	(18)	(17)	(16)	(14)	(14)	(12)	(12)	(12)
1983	76	73	71	69	66	63	62	60	59	58	58	57
	(13)	(14)	(16)	(17)	(18)	(20)	(21)	(23)	(25)	(26)	(27)	(27)
1984	56	54	51	48	46	45	44	43	41	40	38	36
	(27)	(27)	(26)	(27)	(28)	(29)	(29)	(29)	(29)	(27)	(26)	(26)
1985	35	34	33	33	32	30	29	28	27	26	25	25
	(26)	(25)	(25)	(24)	(24)	(23)	(22)	(21)	(21)	(22)	(22)	(23)
1986	24	23	22	21	19	18	16	15	15	14	14	13
	(23)	(23)	(23)	(22)	(21)	(20)	(20)	(19)	(17)	(16)	(15)	(13)
1987	13	14	14	15	16	17	18					
	(12)	(11)	(11)	(12)	(13)	(14)	(15)					

The table gives observed *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a left-hand bracket. They are based on final Zürich numbers through 1980 and provisional International numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1981 are included. The numbers after the bracket are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1981). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

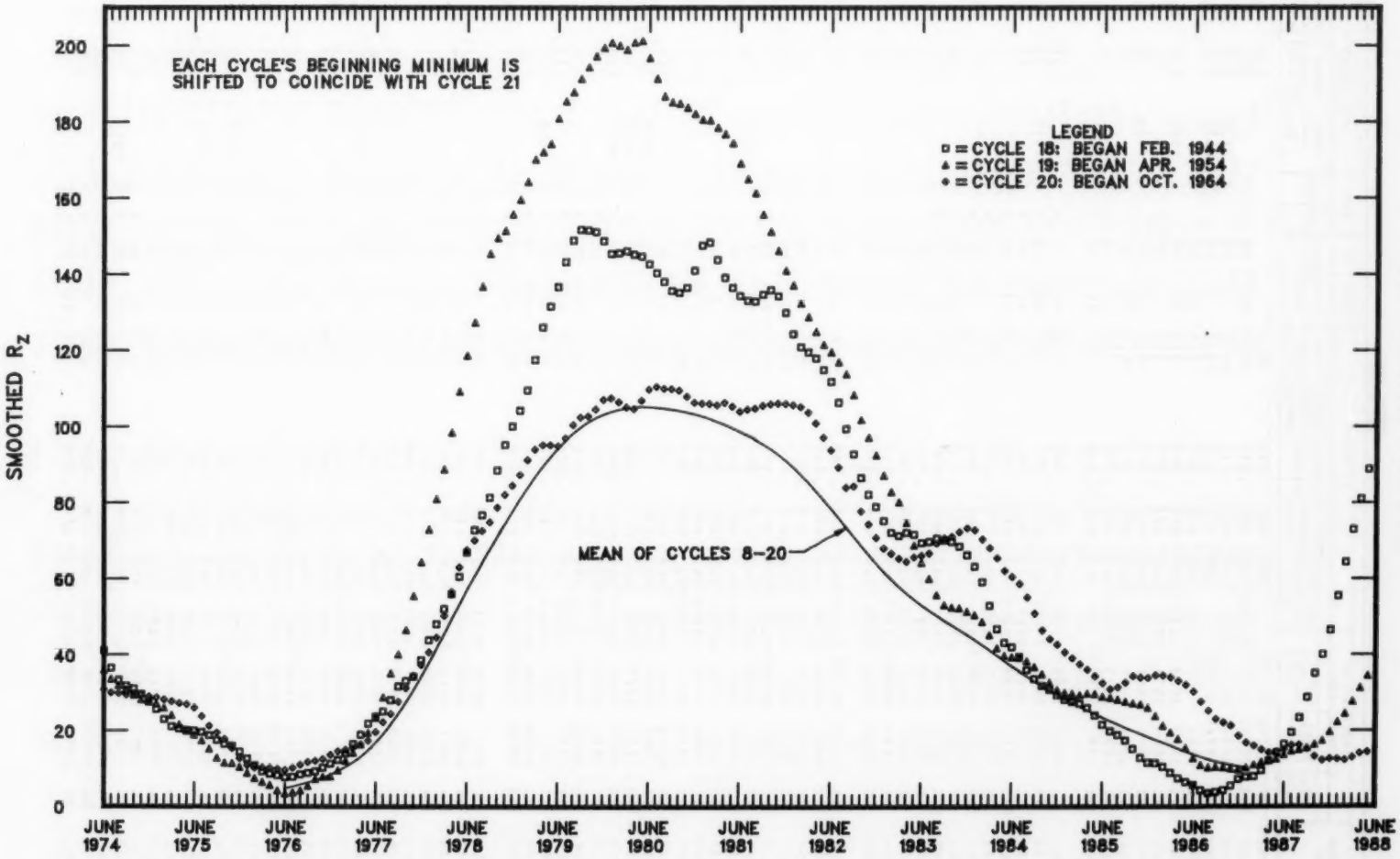
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Later studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we adopted a June 1976 minimum.

*MAXIMUM OF SUNSPOT CYCLE 21. The maximum smoothed sunspot number occurred in December 1979.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



17
Apr 81

Hα SOLAR FLARES

APRIL 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			CONG.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
MANI	01	0115E	0148U		S43	W52	.918		28.2						500	9.4	
MANI	01	0115E	0117	0241	S43	W52	.918		28.2	860	2B	1	V		350	6.6	FZ
PEKG	01	0130E	0136	0240	S43	W52	.918		28.2	700	3B		P	0136	967	19.0	FIRU
PEKG	01	0130E	0130		S42	W51	.910		28.2		2B		P	0130	610	11.6	FKRU
ISTA	01	0740		0750	N06	E20	.342		2.8	10	1N						D
WEND	01	1447	1530	1600	N02	E21	.360		3.2	73	SN		C	1500	175	1.9	E
HOLL	01	1448	1451	1544	N03	E22	.375		3.3	56	SN	3	C		64		
WEND	01	1541	1544	1558	S35	W55	.305		28.5	17	SF		C	1544	56	1.2	C
HOLL	01	1542	1543	1620	S44	W58	.345		28.3	38	SF	3	C		13		
HOLL	01	1808	1823	1845	N15	E52	.790		5.7	37	SN	3	C		41		
HOLL	01	2335	2338	2343	N17	E90	1.000		8.7	14	SB	3	C				
HOLL	02	0002	0009	0043	N15	E50	.770		5.8	41	SN	3	C		31		
BIGB	02	0004	0010	0028	N15	E52	.731		5.9	240	SN	3	P	0010	80	1.3	
LEAR	02	0008	0012	0019	N15	E52	.791		5.9	11	SF	3	C		53		
HOLL	02	0339	0043	0050	N09	W79	.980		27.1	110	SN	3	C				
LEAR	02	0557	0557	0559	N06	E79	.980		8.2	2	SF	3	C				
LEAR	02	0805	0805	0813	S43	W65	.366		28.5	8	SF	3	C		14		
LEAR	02	0840	0841	0852	S18	E58	.878		6.7	12	SF	3	C		28		
ATHN	02	1103	1105	1128	S43	W68	.975		28.4	25	1B	3	C		254		
RAMY	02	1813	1815	1837	N07	E59	.855		7.2	24	SN	3	C		72		D
RAMY	02	1817	1817	1823	N13	E08	.204		3.4	6	SF	3	C		21		
RAMY	02	1837	1840	1937	N20	W65	.307		28.3	60	SF	3	C		20		
RAMY	02	1923	1926	2028	S43	W65	.965		28.9	65	2B	3	C		252		D
PALE	03	0115E	0123U	0127	S43	W73	.987		28.6	120	SF	2	C		51		
LEAR	03	0121	0122	0127	S43	W75	.990		28.4	6	SF	3	C				
LEAR	03	0126	0127	0132	N02	E50	.768		5.8	6	SB	3	C		77		
PALE	03	0159	0211	0235	S43	W72	.984		28.7	36	1B	2	C		93		
LEAR	03	0202	0211	0235	S44	W73	.987		28.6	33	1B	3	C				
PEKG	03	0206	0211	0216	S41	W73	.985		28.6	10	SN		P	0211	34		D
LEAR	03	0503	0510	0524	S44	W79	.996		28.3	15	SF	3	C				
LEAR	03	0755	0756	0759	S46	W80	.998		28.3	4	SF	3	C				
LEAR	03	0934	0955	1004	S43	W82	.993		28.2	560	2B	3	C				
MANI	03	0919E	0920	0925	S42	W80	.997		28.4	60	SN	1	V				
LEAR	03	0933	0945	0955	N03	E07	.147		3.3	17	SF	3	C		126		
BIGB	03	1640	1648	1755	N23	E73	.379		9.6	76	1N	3	C	1648	180		
BIGB	03	1700	1705	1719	N18	E70	.938		9.0	19	SB	3	C	1705	90		
BIGB	03	2020	2023	2043	N04	E40	.641		6.8	23	SN	3	C	2023	120	1.6	
PALE	03	2022	2022U	2027	N08	E41	.655		6.9	50	SN	3	C		72		D
PALE	03	2043E	2043U	2102	N11	E41	.659		6.9	130	SF	3	C		27		
PALE	03	2319	2336	2340	N13	E37	.610		6.7	210	2B	3	C		830		
BIGB	03	2320	2337	0041	N15	E38	.628		6.8	810	2B	3	P	2353	420	5.5	
LEAR	03	2323E	2338	0053	N10	E38	.617		6.8	900	2B	3	C		776		
MANI	03	2340E	2346U	2351	N11	E38	.613		6.8	110	2N	1	V		520	7.2	F
PALE	04	0017	0018	0021	S41	W82	.998		28.9	4	SF	2	C				
LEAR	04	0039	0042	0054	S16	E35	.643		6.7	15	SF	3	C		51		
LEAR	04	0211	0211	0220	N18	E75	.964		9.7	9	SF	3	C				
LEAR	04	0330	0335	0351	N16	E76	.968		9.8	21	SF	3	C				
LEAR	04	0434	0437	0507	N16	E76	.968		9.9	33	SF	3	C				
LEAR	04	0502	0503	0503	S44	W85	1.000		28.8	30	2B	3	C		245		D
LEAR	04	0551	0552	0557	N16	E21	.404		5.8	6	SN	3	C		36		
PEKG	04	0758	0803	0818	N03	E35	.573		7.0	20	SB		C	0803	101	1.3	E
MANI	04	0801E	0802	0803	N06	E36	.586		7.0	80	SB	1	V		120	1.6	
LEAR	04	0832	0839	0843	N02	E34	.559		6.9	41	1B	3	C		312		
LEAR	04	0830	0835	0836	N16	E72	.949		9.8	60	2B	3	C				D
PALE	04	1749	1753	1801	N11	E39	.633		7.7	12	SF	2	C		26		
PALE	04	2123E	2131U	2134	N18	E12	.312		5.8	110	SF	2	C		21		
HOLL	04	2148	2206	2240	N18	E71	.944		10.2	52	1N	3	C				
BIGB	04	2159	2206	2243	N18	E65	.905		9.8	50	1B	3	C	2206	90	2.2	
HOLL	04	2201	2205	2236	N16	W21	.404		3.3	35	SN	3	C		73		
BIGB	04	2210	2221	2334	N13	W45	.724		1.5	84	SN	3	C	2221	90	1.3	
HOLL	04	2210	2220	2321	N21	W47	.751		1.4	71	SN	3	C		142		
HOLL	04	2222	2226	2243	S15	E24	.507		6.7	27	SF	3	C		23		
PALE	04	2251	2251	2329	N18	W46	.732		1.5	390	SF	2	C		76		
HOLL	04	2303	2318	2332	N04	E26	.437		6.9	23	SB	3	C		113		
BIGB	04	2305	2317	2340	N05	E26	.437		6.9	35	SB	3	C	2317	70	.8	
PALE	04	2312E	2318U	2335	N03	E26	.438		6.9	230	SN	2	C		105		
MANI	04	2312E	2315	2319	N05	E26	.437		6.9	70	SB	1	V		120	1.4	F
HOLL	04	2357	2358	0055	N15	W24	.439		3.2	59	SF	3	C		37		

Hα SOLAR FLARES

APRIL 1981

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. LON. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
BIGB	05	0005	0008	0046	N18	W21	.421		3.4	410	SF	3	P	0038	100	1.0	
PALE	05	0006	0007	0027	N14	W18	.348		3.7	210	SF	3	C		24		
PEKG	05	0025	0030	0046	N16	W22	.418		3.4	210	SN		P	0042	84	1.0	D
PEKG	05	0147E	0147	0158	N18	E70	.338		10.3	110	SN		P	0147	21		D
PALE	05	0150	0205	0238	N18	E66	.913		10.0	48	SF	3	C		37		
LEAR	05	0210	0211	0215	N04	E23	.390		6.8	5	SF	3	C		34		
LEAR	05	0217	0219	0225	N02	E20	.343		6.6	8	SF	3	C		45		
PALE	05	0250	0258	0353	N18	E65	.306		10.0	630	SF	2	C		42		
LEAR	05	0252	0255	0310	N17	E62	.884		9.8	18	SF	3	C		20		
PEKG	05	0258	0303	0315	N17	E64	.899		9.9	17	SF		C	0303	46		D
PEKG	05	0403	0405	0425	N15	W25	.453		3.3	22	SN		P	0405	25	.3	E
PEKG	05	0403	0405	0405	N17	E63	.891		9.9	20	SF		P	0405	34		D
LEAR	05	0543	0543	0554	N13	E57	.838		9.5	11	SF	3	C		15		
LEAR	05	0549	0551	0604	N22	W30	.562		3.3	15	SN	3	C		102		
PEKG	05	0553E	0550	0600	N25	W31	.594		2.9	100	SF		P	0554	42	.6	E
LEAR	05	0609	0610	0625	N05	E38	.614		8.1	16	SF	3	C		19		
PEKG	05	0730	0735	0751	N03	E21	.358		6.9	21	SN		C	0735	25	.3	E
LEAR	05	0733	0735	0757	N02	E20	.343		6.8	24	SF	3	C		61		
MANI	05	0738E	0739U	0741	N05	E24	.406		7.1	30	SF	1	V		30	.4	
HOLL	05	1418E	1418U	1441	N03	E18	.309		6.9	230	SN	2	C		177		
HOLL	05	1520	1522	1530	N14	W31	.532		3.3	10	SF	3	C		25		
BIGB	05	1721	1728	1742	S08	W80	.387		30.7	21	SN	3	C	1728	60		
HOLL	05	1723	1723	1733	S07	W78	.983		30.9	7	SF	3	C				
HOLL	05	1734	1735	1742	S17	E12	.408		6.6	8	SF	3	C		30		
HOLL	05	1736	1753	1815	N04	E16	.275		6.9	39	SF	3	C		39		
PALE	05	1742E	1753U	1815	N04	E15	.258		6.9	33	SF	3	C		26		
HOLL	05	1826	1827	1844	N03	E16	.276		7.0	18	SF	3	C		22		
HOLL	05	1852	1854	2052	N17	E56	.833		10.0	120	SN	3	C		40		
BIGB	05	1853	1910	2110	N18	E57	.843		10.1	137	SN	3	C	1910	100	1.0	
BIGB	05	1855	1911	1943	S09	W80	.387		30.8	48	SN	3	C	1911	40		
PALE	05	1903E	1903U	2104	N18	E56	.834		10.0	121	1N	3	C		120		D
PALE	05	1903E		1943	S08	W79	.984		30.9	40	SN	3	C				
PALE	05	1930E	1953	2000	N03	E13	.225		6.8	30	SF	3	C		49		
PALE	05	1930E	1942U	1959	N15	E26	.467		7.8	29	SF	3	C		71		
PALE	05	2052E		2104	S08	W79	.384		30.3	12	SF	3	C				
PALE	05	2135	2143	2317	N03	E13	.225		6.9	102	1B	3	C		247		
BIGB	05	2136	2146	2316	N04	E15	.258		7.0	100	SB	3	C	2146	110	1.2	
HOLL	05	2136	2144	2231	N04	E14	.241		7.0	55	SB	3	C		186		D
LEAR	05	2352	2353	2357	S17	E11	.401		6.8	5	SF	3	C		45		
LEAR	06	0145	0151	0203	S16	E07	.359		6.6	24	SF	3	C		127		
ISTA	06	0650		0740	N16	E52	.793		10.2	50	1B						BI
LEAR	06	0655	0712	0731	N16	E47	.740		9.8	36	SN	3	C		124		
PEKG	06	0702	0710	0740	N13	E51	.788		10.1	38	1B		C	0710	126	2.2	FU
ISTA	06	0705		0820	N21	E58	.855		10.6	75	SB						D
ISTA	06	1724		1732	N19	E90	1.000		13.1	8	SB						D
WEND	06	0728E		0753	N18	E51	.785		10.1	250	1N		C	0728	188	3.2	
MANI	06	0743E	0745	0758	N21	E57	.847		10.6	150	SF	1	V		30	.6	
RAMY	06	1736	1736	1753	N03	E01	.023		5.8	23	SF	3	C		21		
RAMY	06	1909	1913	1953	S06	W31	.537		4.5	41	SN	3	C		86		
BIGB	06	1910	1927	2023	S08	W32	.560		4.4	73	SF	3	C	1927	120	1.5	
RAMY	06	1929	1929	1939	N17	E45	.720		10.2	10	SF	3	C		24		
PALE	06	1332E	1335U	1345	S07	W32	.555		4.4	130	SF	2	C		25		
BIGB	06	2058	2100	2114	N19	W40	.667		3.9	16	SN	3	C	2100	70	.9	
RAMY	06	2100	2100	2123	N17	E41	.673		10.0	20	SN	3	C		57		
PEKG	07	0118	0121	0130	N17	E39	.649		10.0	12	SN		P	0121	97	1.4	EF
MANI	07	0128E	0128U	0138	N18	E42	.688		10.2	100	1N	1	V		160	2.5	F
MANI	07	0146E	0147	0151	N19	E44	.714		10.4	50	SN	1	V		120	1.9	
LEAR	07	0433	0433	0535	N11	E19	.345		8.6	95	1N	3	C		329		
PEKG	07	0420	0435	0539	N10	E18	.324		8.5	790	1B		P	0435	421	4.7	FZ
LEAR	07	0424	0441	0513	N08	E25	.426		9.1	43	SN	3	C		54		
MANI	07	0435E	0435U	0518	N03	E18	.319		8.5	430	1N	1	V		300	3.4	F
LEAR	07	0635	0637	0651	N13	W37	.122		6.7	16	SN	3	C		43		
LEAR	07	0659	0704	0711	N18	E38	.640		10.1	12	SF	3	C		21		
WEND	07	1439	1456	1501	N21	E82	.388		13.8	22	SN		C	1456	38		A
WEND	07	1440	1442	1456	N12	E90	1.000		14.4	16	SN		C	1442	25		
HOLL	07	1448	1449	1504	N06	E24	.407		9.4	16	SF	3	C		46		
WEND	07	1526	1530	1535	S05	W44	.705		4.3	9	SF		C	1530	34	.5	
BIGB	07	1539	1542	1601	N22	E88	.998		14.3	22	1B	3	C	1542	70		
WEND	07	1540	1543	1545	N21	E82	.388		13.8	5	SN		C	1543	46		A
HOLL	07	1543	1547	1607	N06	E23	.391		9.4	24	SN	3	C		122		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION — MIN.	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			CONF.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
WEND	07	1543	1545	1549	N08	E26	.441		9.6	6	SN		C	1545	40	.5	
WEND	07	1603	1606	1618	N17	E32	.560		10.1	15	SN		C	1606	75	.9	
BIGB	07	1604	1607	1632	N13	E28	.520		9.8	28	SN	3	C	1607	60	.7	
HOLL	07	1606	1608	1618	N13	E28	.487		9.8	12	SN	3	C		63		
SOUL	07	1625	1642	1752U	N10	W04	.129		7.4	87U	2B	2	C		800		
PALE	07	1717	1719	1727	N09	E23	.398		9.4	10	SF	3	C		70		
PALE	07	1823	1826U	1926	N07	E18	.312		9.1	63	SN	3	C		93		
BIGB	07	1826	1829	1846	N10	E22	.386		9.4	20	SF	3	C	1829	70	.8	
HOLL	07	1827	1827	1836	N05	E21	.358		9.3	9	SN	3	C		67		
PALE	07	1916E	1916U	1923U	N21	E73	.955		13.3	7U	SF	3	C				
BIGB	07	1952	1958	2047	N01	W64	.833		3.0	55	1N	3	C	1958	110	2.6	
PALE	07	1953	1955U	2022U	N02	W63	.830		3.1	29U	1F	3	C		161		D
PALE	07	2015	2015U	2335U	N08	E21	.363		9.4	23U	SF	3	C		116		
LEAR	08	0042	0046	0058	N08	E19	.332		9.5	16	SN	3	C		58		
LEAR	08	0156	0156	0204	N13	E73	.980		14.0	8	SF	3	C				
LEAR	08	0222	0223	0227	N13	E73	.980		14.0	5	SN	3	C				
LEAR	08	0252	0254	0302	N08	W07	.143		7.6	13	SF	3	C		52		
LEAR	08	0415	0419	0445	N07	E13	.231		9.2	30	SF	3	C		90		
LEAR	08	0521	0522	0532	N06	E08	.144		8.8	11	SN	3	C		117		
LEAR	08	0541	0544	0552U	S14	W25	.507		6.4	11U	SN	3	C		73		
LEAR	08	0842	0843	0849	N13	E74	.959		13.9	7	SF	3	C				
WEND	08	1328E		1342U	S14	W27	.531		6.4	14U	SN		C	1029	162	1.9	
ATHN	08	1035	1037	1043U	S15	W28	.551		6.3	8U	SB	4	C		95		D
ATHN	08	1235	1238	1312	N10	E78	.377		14.4	37	SB	4	C		64		D
HOLL	08	1413	1442	1446	N10	E70	.939		13.8	33	SF	3	C				
HOLL	08	1454	1519	1528	N12	E75	.964		14.2	32	SF	3	C				
HOLL	08	1500	1500	1517	S16	W26	.535		6.7	17	SF	3	C		21		
HOLL	08	1520	1523	1534	N07	E06	.113		9.1	14	SF	3	C		34		
HOLL	08	1623	1638	1641U	N11	W03	.139		8.5	18U	2B	3	C		689		D
BIGB	08	1625	1638	2240	N10	W06	.151		8.2	375	1B	3	C	1633	310	3.2	
HOLL	08	1627	1637	1701U	N07	E03	.079		8.9	34U	SB	3	C		178		
HOLL	08	1652	1654	1659	N12	E71	.944		14.0	7	SF	3	C		13		
HOLL	08	1750	1809	1908	N04	W30	.493		6.5	78	1B	3	C		136		
BIGB	08	1758	1815	2053	N03	W30	.499		6.5	175	SB	3	C	1816	90	1.1	
BIGB	08	1803	1825	2159	N08	W31	.517		6.4	173	SN	3	C	1825	70	.8	
HOLL	08	1836	1837	1843	N12	E76	.968		14.5	7	SN	3	C				
PALE	08	1839E	1840U	1938U	N03	W23	.484		6.6	53U	SF	3	C		157		
PALE	08	1839E	1841U	1901U	N10	W09	.130		8.1	22U	SF	3	C		123		
PALE	08	1843E	1841U	1918	N07	E02	.068		8.9	28U	SF	3	C		64		
PALE	08	1855E	1859	1910	N15	E75	.964		14.4	15U	SF	3	C				
HOLL	08	1902	1928	2052	N07	E06	.119		9.2	110	SB	3	C		186		
HOLL	08	1908	1914	1935	N05	W23	.484		6.6	28	SN	3	C		110		
HOLL	08	1922	1925	1932	N12	E76	.968		14.5	10	SB	3	C				
HOLL	08	1958	2014	2124	N12	E75	.964		14.5	26	SN	3	C				
HOLL	08	2020	2030	2051	N04	W30	.499		6.6	31	SN	3	C		125		
PALE	08	2031E	2040U	2113	N17	E14	.328		9.9	42U	SB	3	C		134		
BIGB	08	2032	2039	2106	N18	E14	.333		9.9	34	SN	3	C	2039	60	.6	
HOLL	08	2032	2038	2105	N15	E14	.317		9.9	33	SB	3	C		87		
PALE	08	2058	2106	2138	N10	W09	.190		8.2	40	SF	3	C		43		
PALE	08	2101	2104	2121	N14	E74	.959		14.4	20	SF	3	C				
HOLL	08	2103	2104	2111	N12	E74	.959		14.4	9	SN	3	C				
PALE	08	2253E	2301U	2306U	N04	W32	.529		6.6	13U	SF	3	C		74		D
BIGB	08	2327	2337	0021	N17	E75	.964		14.6	54	SN	3	C	2337	60		A
LEAR	08	2328	2330	0021	N14	E72	.949		14.4	53	SN	3	C				
PALE	08	2342E	0024U	0213	N04	W32	.529		6.6	157U	1F	3	C		180		
PALE	08	2342E	0003U	0104	N08	W00	.076		9.0	82U	SF	3	C		55		
PALE	08	2342E	2357	0000	N14	E72	.949		14.4	18U	1N	3	C				
PALE	08	2342E	0045U	0205U	N19	E13	.341		10.0	143U	SF	3	C		49		
MANI	09	0001E	0003	0005U	N13	E67	.919		14.0	4U	SF	1	V		50	1.0	
MANI	09	0146	0147U	0154U	N08	W10	.189		8.3	8U	SF	1	V		25	.3	
BIGB	09	1445	1453	1528	N05	W22	.374		8.0	43	SF	3	C	1453	120	1.3	
BIGB	09	1529	1531	1600	N10	W16	.295		8.4	31	SF	3	C	1531	70	.8	
BIGB	09	1556	1558	1611	N11	E80	.983		15.7	15	SN	3	C	1558	50		
BIGB	09	1653	1710	1821	N15	E61	.875		14.3	88	1N	3	C	1710	110	2.3	
BIGB	09	1712	1716	1803	N09	W23	.393		8.3	48	SN	3	C	1716	80	.9	
BIGB	09	1721	1727	1824	N18	E01	.250		9.8	63	SB	3	C	1727	150	1.5	
BIGB	09	1814	1839	2041	N07	W22	.377		8.1	147	1N	3	C	1839	190	2.1	
BIGB	09	1821	1824	1852	N10	E74	.960		15.3	31	1N	3	C	1824	140		
BIGB	09	2326	2336	2354	N14	E72	.949		15.4	28	SF	3	C	2336	70		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
MANI	10	0115E	0115U	0125J	N10	W26	.448		8.1	10J	SN	1	V		50	.6	F
MANI	10	0432E	0435U	0505J	N05	W28	.463		8.1	33D	1B	1	V		350	4.2	FE
ISTA	10	0715		0732	N07	W14	.248		9.3	17	1N						BU
ISTA	10	0727		0732	N03	W52	.287		6.4	5	SN						B
WEND	10	0748	0751	0802	N06	W36	.587		7.6	14	SN		C	0751	118	1.5	
BUCA	10	0750	0751	0805	N08	W37	.603		7.5	15	SF		C	0751	54	.7	E
WEND	10	0831	0835	0833	N07	E65	.905		15.2	8	SF		C	0835	34		
HOLL	10	1632	1730U	2J33J	NJ7	W35	.574		8.1	217D	3B	3	C		1298		
RAMY	10	1634	1653	2018	N08	W38	.617		7.8	224	3B	3	C		1239		D
BIGB	10	1638	1654	1746J	N07	W35	.574		8.1	68D	2B	3	P	1654	420	5.3	
WEND	10	1644E	1651	1731J	N03	W37	.604		7.3	47D	2B		C	1651	830	10.9	I
BOUL	10	1655E		1900J	NJ8	W36	.589		8.J	125D	2B	3	C				
PALE	10	1704E	1720U	1859J	N14	E47	.738		14.2	115D	1B	3	C		278		
PALE	10	1704E	1707U	2021J	N07	W36	.588		8.0	197D	3B	3	C		1137		
WEND	10	1705	1721	1731J	N13	E52	.731		14.6	26D	SN		C	1721	112	1.3	
PALE	10	1717E	1751U	1858J	N07	W23	.394		9.0	101D	SF	3	C		97		
PALE	10	1717E	1717U	1859J	N13	WJ6	.286		10.3	102D	SF	3	C		37		
RAMY	10	1823	1826	2015	N13	E49	.759		14.4	112	SB	3	C		161		D
BOUL	10	1825	1827U	1854	N13	E47	.735		14.3	29	SB	2	C		80		D
HOLL	10	1301	1311	2003J	N17	E51	.786		14.6	68D	SB	3	C		143		
BIGB	10	191JE	1916	1953	N2J	E51	.792		14.6	43D	SB	3	P	1916	90	1.5	
PALE	10	1910E	1912U	2022J	N18	E52	.798		14.7	72D	1B	3	C		278		
PALE	10	1910E	1913U	1939	N07	W23	.394		9.1	23D	SF	3	C		28		
RAMY	10	2023	2051	2108	N13	W11	.324		10.0	45	SF	3	C		48		
RAMY	10	2059	2102	2117	S04	E65	.909		15.7	18	SF	3	C		49		
BIGB	10	2207	2213	2249	NJ7	W25	.425		9.0	42	SN	3	C	2213	60	.7	
MANI	10	2258E	2259U	2302J	N13	E45	.713		14.3	4D	SF	1	V		60	1.0	
LEAR	10	2343	2350	2357	N05	W28	.473		8.3	9	SN	3	C		35		
HOLL	11	0031	0033	0050	NJ6	W28	.473		8.9	19	SB	2	C		115		D
LEAR	11	0031	0032	0053	N08	W28	.473		8.9	22	SN	3	C		104		
LEAR	11	0117	0200	0244	N14	E42	.679		14.2	87	SB	3	C		83		D
MANI	11	0118	0120	0126J	N13	E46	.725		14.5	9D	SN	1	V		110	1.6	E
PEKG	11	0121E	0122	0137	N16	E46	.731		14.5	16D	SB		P	0121	105	1.7	EF
LEAR	11	04J4	J4J7	J423	N1J	W42	.672		8.0	19	SF	3	C		44		
LEAR	11	0405	0409	0428	N14	E41	.667		14.2	23	SB	3	C		112		D
LEAR	11	0458	0502	0520	N07	W33	.623		8.3	22	SN	3	C		75		
LEAR	11	0536	0546	0557	N13	E44	.701		14.5	21	SN	3	C		83		
LEAR	11	0829	0830	0838	N19	W14	.355		10.3	9	SN	3	C		38		
WEND	11	0949	0951	0955	N08	W33	.547		8.9	9	SF		C	0951	38	.5	
WEND	11	1010	1018	1037	N13	E42	.677		14.6	27	1N		C	1018	175	2.5	
WEND	11	1133	1147	1206	S08	E55	.823		15.6	27	SF		C	1147	113	2.0	
WEND	11	1235	1239	1247	N08	W35	.575		8.9	12	SF		C	1239	88	1.5	
WEND	11	1304	1308	1316	N13	E41	.665		14.6	12	SF		C	1308	81	1.1	
RAMY	11	1330	1336	1410	N11	E51	.778		15.4	40	1B	3	C		205		D
RAMY	11	1440	1441	1504	N11	W45	.710		8.2	24	SF	3	C		26		
WEND	11	1507	1513	1533	N13	E40	.652		14.6	26	SF		C	1519	106	1.5	
WEND	11	1633	1636	1651	N13	E39	.639		14.6	21	SF		C	1636	75	1.0	
PALE	11	1719E	1830	1921	N14	E37	.616		14.5	122D	1B	3	C		281		
PALE	11	1719E	1740U	1806	N07	W36	.588		8.0	47D	SF	3	C		64		
PALE	11	1713E	1724U	1820	N17	W22	.431		10.1	61D	SN	3	C		159		
HOLL	11	1739E	1829	1914	N12	E37	.611		14.5	95D	SB	3	C		143		
HOLL	11	1739E	1744U	1820	N16	W22	.424		10.1	41D	SN	3	C		43		
BIGB	11	1742	1834	1914	N12	E35	.584		14.4	32	SB	2	C	1826	80	1.0	
PALE	11	1745E	1750U	1754	N12	E50	.763		15.5	3D	SF	3	C		21		
PALE	11	1748	1800	1809	N08	W46	.719		8.3	21	SN	3	C		36		
PALE	11	1811	1842	1843	NJ7	W38	.616		8.9	38	SF	3	C		22		
PALE	11	1812	1814	1820	N03	W68	.925		5.7	8	SF	3	C		30		
PALE	11	1827	1834	1851	N17	W23	.444		10.0	24	SN	3	C		33		
PALE	11	1859	1911	1914	N18	W24	.465		10.0	19	SF	3	C		49		
BIGB	11	1923	1924	193J	NJ8	W40	.644		8.8	1J	SF	2	C	1924	70	.9	
PALE	11	1921	1922	1935	N07	W38	.616		9.0	14	SF	3	C		60		
PALE	11	1926	1937U	1957J	N18	W24	.465		10.0	31D	SF	3	C		26		
HOLL	11	1927	2004	2034	N12	E35	.584		14.4	67	1B	3	C		270		
PALE	11	1927	1928	1944	N14	E33	.563		14.3	17	SF	3	C		57		
PALE	11	1951	1953	1958	N15	E32	.554		14.2	7	SF	3	C		49		
PALE	11	2000E		2011J	N14	E36	.603		14.5	11D	SB	3	C				
BIGB	11	2002	2004	2043	N13	E38	.626		14.7	41	1B	2	C	2004	210	2.7	
PALE	11	2044E	2045U	2043J	N01	W63	.891		7.1	5D	SF	3	C		22		
HOLL	11	2133	2136	2141	N12	E33	.556		14.4	41	SF	3	C		57		
BIGB	11	2138	2140	2156	N07	W41	.655		8.8	18	SN	2	C	2140	70	1.0	
HOLL	11	2138	2142	2155	N07	W41	.656		8.8	17	SN	3	C		56		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION — MIN.	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			CONF.	TYPE	TIME — UT	MEAS. AREA MIL. of Disk	CORR. AREA Sq. Deg.	
PALE	11	2141E	2143U	2147)	N06	W41	.655		8.8	60	SF	3	C		47		
PALE	11	2141E	2143U	2147)	N13	E29	.504		14.1	60	SF	3	C		41		
HOLL	11	2150	2150	2206	N16	W25	.464		10.0	16	SF	3	C		39		
HOLL	11	2233	2253	2255	N03	W73	.356		6.5	22	SF	3	C				
PEKG	11	2338	2343	0050	N13	E28	.490		14.1	72	1N		C	2343	168	2.1	FU
HOLL	11	2338	JJJJ	J137)	N12	E30	.514		14.2	890	2B	3	C		677		D
BIGB	11	2344	0001	0040)	N12	E30	.514		14.2	560	1B	2	P	0001	340	4.0	
PEKG	12	0000	0003	0010	N13	E31	.532		14.3	10	SN		C	0003	101	1.3	E
MANI	12	0028E	0028U	0040)	N13	E28	.490		14.1	120	SF	1	V		130	1.2	F
PEKG	12	J129	J135		N14	E35	.590		14.7		SN		P	0135	46	.6	EK
PEKG	12	0129	0146	0230	N14	E33	.564		14.5	61	SN		P	0146	71	.9	E
PEKG	12	0300	0306		N14	E34	.577		14.7		SN		P	0306	34	.4	E
PEKG	12	0300	0310	0340	N14	E32	.550		14.5	40	SN		P	0310	21	.3	E
PEKG	12	J4J4	J413	J413	N18	W29	.533		13.3	9	SN		P	0410	21	.3	D
PEKG	12	0556	0602	0615	N14	E31	.536		14.6	19	SN		P	0602	50	.6	E
WEND	12	0600E	0604	0616	N13	E30	.518		14.5	160	SN		C	0604	156	1.9	E
MANI	12	0603E	0604	0607)	N13	E27	.475		14.3	40	SN	1	V		80	1.0	
BUCA	12	0650	0652	0704	N21	W27	.526		13.3	14	SN		C	J652	54	.7	D
ISTA	12	J650		0700	N22	W28	.545		10.2	10	1N						D
PEKG	12	0655	0700	0710	N11	W53	.800		8.3	15	SF		P	0700	25	.4	D
PEKG	12	0704	0706	0715	N18	W31	.556		10.0	11	SF		P	0706	21	.3	D
BUCA	12	0706		0740	N18	W23	.530		10.1	34	SN		C	0708	54	.7	D
ISTA	12	J712		J718	N18	W27	.534		13.3	6	1N						D
WEND	12	0718	0732	0753	N13	E24	.433		14.1	35	SF		C	0732	144	1.7	E
PEKG	12	0720	0723	0815	N13	E27	.475		14.3	55	SN		P	0722	34	.4	E
BUCA	12	0720		0744	N13	E27	.476		14.3	24	SN		C	0720	43	.5	D
ISTA	12	0720		0733	N13	E27	.475		14.3	13	1N						D
WEND	12	0739	0751	0819	N13	E31	.532		14.6	40	1F		C	0751	181	2.2	
PEKG	12	0740	0743		N14	E31	.536		14.6		SN		P	0743	55	.7	EKT
BUCA	12	0740	0754	0824	N13	E28	.490		14.4	44	SN		C	0754	107	1.3	E
PEKG	12	0740	0802	0834	N14	E29	.509		14.5	54	SN		P	0802	59	.7	E
WEND	12	J749	J8J2	J852	N19	W29	.535		13.2	63	SN		C	0802	150	1.9	E
BUCA	12	0756		0842	N18	W29	.530		10.2	46	1N		C	0756	268	3.3	
PEKG	12	0800E	0800	0815	N18	W29	.530		10.2	150	SN		P	0800	97	1.2	FU
MANI	12	0805E	0806U	0823)	N08	W40	.644		9.3	190	SN	1	V		50	.7	F
WEND	12	0833	J937	J935	N13	E29	.534		14.5	62	1N		C	J937	181	2.2	E
PEKG	12	0855	0908	0929	N14	E29	.509		14.5	34	1N		P	0908	206	2.6	EFT
MANI	12	0907E	0909U	0926	N13	E30	.518		14.6	130	SN	1	V		75	1.0	F
WEND	12	1242	1250	1307	N14	E25	.453		14.4	25	1N		C	1250	344	4.0	
RAMY	12	1254	1254	1330	N14	E25	.453		14.4	36	1B	3	C		385		
HOLL	12	1343	1351	1412)	N12	W56	.830		8.4	320	SN	3	C		82		
RAMY	12	1348	1350	1434	N11	W56	.829		8.4	54	SF	3	C		70		
HOLL	12	1352	1353	1357	N18	W34	.534		10.0	5	SN	3	C		28		
RAMY	12	1402	1406	1422	N17	W34	.589		10.0	20	SN	3	C		63		
RAMY	12	1434	1437	1522	N12	E18	.343		13.9	78	SF	3	C		98		
RAMY	12	1434	1438	1451	N11	E35	.581		15.2	17	SN	3	C		87		
RAMY	12	1439	1450	1507	N18	W35	.606		10.0	28	SF	3	C		38		
RAMY	12	1555	1607	1613	N18	W36	.613		10.0	18	SB	3	C		104		
WEND	12	1604	1607	1611	N18	W34	.594		10.1	7	SF		C	1607	44	.6	
HOLL	12	1606	1607	1611	N16	W34	.585		10.1	5	SN	3	C		55		
RAMY	12	1609	1613	1710	N14	E21	.397		14.2	61	SN	3	C		77		
HOLL	12	1609	1613	1618	N11	E22	.333		14.3	3	SF	3	C		32		
BIGB	12	1717	1722	1753	N18	W35	.606		10.1	42	SN	1	C	1722	70	.9	
BIGB	12	1946	1951	2026	N09	W70	.938		7.6	40	1N	2	C	1951	80		
BIGB	12	1946	1948	2007	N22	E10	.361		13.6	21	SN	2	C	1948	60	.6	
PALE	12	1347	1343U	2000)	N23	E11	.382		13.6	130	SN	3	C		151		
PALE	12	1355E	2000U	2006)	N14	E24	.433		14.6	110	SF	3	C		99		
PALE	12	2117E	2118U	2236)	N14	E23	.383		14.4	510	SF	3	C		99		
BIGB	12	2132	2146	2304	N12	E17	.325		14.2	92	1B	2	C	2146	210	2.3	
MANI	12	2210F	2210U	2242	N12	E17	.325		14.2	320	SN	1	V		150	1.7	F
BIGB	12	2215	2216	2224	N09	W55	.813		8.8	13	SN	2	C	2216	70	1.3	
BIGB	12	2226	2231	2319	N16	W40	.661		9.9	53	SB	2	C	2231	130	1.7	
MANI	12	2237E	2238U	2241)	N10	W55	.819		8.8	40	SF	1	V		60	1.1	F
PEKG	12	2241E	2241	2300	N12	E17	.325		14.2	190	SN		P	2241	97	1.1	FT
LEAR	13	0203	0211	0234	N12	E20	.370		14.6	31	SB	3	C		120		
PEKG	13	J213	J215	J240	N14	E23	.384		14.6	30	SN		P	0213	67	.8	E
LEAR	13	0235	0238	0244	N07	W52	.787		9.2	9	SF	3	C		21		
LEAR	13	0252	0252	0305	N12	E18	.341		14.5	16	SN	3	C		25		
LEAR	13	0422E		0451	N13	E20	.376		14.7	230	SB	3	C		146		
PEKG	13	0423	0429	0440	N14	E19	.373		14.6	17	SN		P	0428	76	.9	E

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
MANI	13	0428E	0428	0432J	N15	E20	.391		14.7	4J	SN	1	V		70	.8	F
PEKG	13	0530	0533	0536	S08	E53	.865		17.7	6	SF		C	0533	25	.5	E
LEAR	13	0532	0534	0548	N20	E06	.307		13.7	16	1B	3	C		240		
PEKG	13	0532	J535	J545	N21	EJ5	.318		13.6	13	SN		C	J535	5J	.6	E
MANI	13	0535E	0536U	0542J	N22	E06	.338		13.7	7D	SN	1	V		30	.4	
WEND	13	0638	0637	0649	S19	W80	.989		7.3	19	SF		C	0637	31		
LEAR	13	0637	0640	0648	N12	E16	.312		14.5	11	SN	3	C		53		
LEAR	13	0716	0741	0753	N13	E19	.362		14.7	43	1B	3	C		265		D
BUCA	13	J717	J74J	J753	N13	E17	.334		14.6	42	1N		C	0740	215	2.5	D
LEAR	13	0724	0725	0739	S09	E58	.858		17.7	15	SN	3	C		39		
WEND	13	0725	0735	0758	N14	E15	.315		14.4	33	1N		C	0735	400	4.4	
PEKG	13	0735	0742	0751	N14	E16	.323		14.5	16	SN		P	0743	55	.6	EF
WEND	13	J753	J838	J842	N1J	E21	.374		14.9	52	SF		C	J838	169	1.9	
LEAR	13	0756	0757	0810	N19	W37	.636		10.6	14	SF	3	C		56		
WEND	13	0859	0905	0917	S19	W80	.989		7.4	18	SF		C	0905	50		
LEAR	13	0922	0924	0935	S03	E56	.840		17.6	13	SF	3	C		40		
WEND	13	0928	0934	0955	N19	W45	.728		13.J	27	SF		C	J934	5J	.7	
LEAR	13	J935	J939	J940J	NJ7	W56	.828		9.2	5D	SN	3	C		40		
WEND	13	0936	0946	0958	N08	W60	.865		8.9	22	SF		C	0946	50	1.0	
WEND	13	1002	1021	1058	N14	E13	.230		14.4	56	SF		C	1021	131	1.4	E
ATHN	13	1015E	1023U	1027	N14	W02	.192		13.3	12D	SN	3	C		64		
WEND	13	132J	1346	1433	NJ9	E32	.535		16.0	73	1F		C	1346	387	4.8	E
RAMY	13	1320	1345	1433J	N10	E28	.479		15.7	79D	1N	3	C		484		
RAMY	13	1422	1440	1624	N18	W61	.973		3.0	122	SF	3	C		47		
RAMY	13	1553	1600	1614	N14	E08	.233		14.3	21	SF	3	C		54		
RAMY	13	1615	162J	1634	N15	EJ9	.256		14.4	19	SF	3	C		56		
RAMY	13	1651	1703	1720	S08	E49	.767		17.4	29	SN	3	C		25		
HOLL	13	1814	1919	0000J	N20	W44	.720		10.5	346D	1N	3	C		329		
BIG3	13	1920	1923	0043J	N22	W33	.673		10.8	383D	1N	3	P	1923	210	2.8	
BIG3	13	1834	1901	1946	N22	E73	.957		19.2	72	1F	3	C	1901	1JJ		
PALE	13	1859E	1902	1358J	N19	W47	.750		10.3	53D	1N	3	C		375		D
HOLL	13	1912	1919	1930	N09	W63	.890		9.1	18	SF	3	C		24		
HOLL	13	1929	1930	1953	N14	E08	.233		14.4	30	SF	3	C		57		
HOLL	13	1943	1949	2020	S05	E48	.755		17.4	37	SN	3	C		46		
BIG3	13	1948	1953	2014	SJ9	E5J	.78J		17.6	26	SF	3	C	1953	90	1.4	
HOLL	13	2018	2029	2038	N14	E08	.233		14.4	20	SF	3	C		25		
BIG3	13	2157	2220	0014	N10	W58	.948		3.6	137	SN	3	C	2220	80	1.6	
BIG3	13	2240	2244	2351	N03	E25	.431		15.8	71	SF	3	C	2244	70	.8	
HOLL	13	2243E	2245	2324	NJ8	E22	.382		15.6	41D	SN	3	C		185		
BIG3	13	2250	2258	2349	N16	W70	.939		8.7	59	SN	3	C	2258	70		
HOLL	13	2350	2351	0000J	N13	E07	.209		14.5	10J	SN	3	C		35		
MANI	14	0405E	0406U	0413J	N11	E10	.221		14.9	14D	SN	1	V		60	.7	F
WEND	14	J622E	J628	J637J	N16	E62	.885		18.9	15D	SF		C	0628	44	1.0	
ISTA	14	0842		0902	N13	W03	.181		14.1	20	1N						F
MANI	14	0846E	0847U	0851J	N11	W01	.140		14.3	5D	SF	1	V		45	.5	F
ISTA	14	0852		0905J	N17	E60	.870		18.3	13D	SF						D
RAMY	14	1241	1242	1253	N13	E01	.175		14.6	18	SN	3	C		51		
BIG3	14	1455	1502	1509	N17	W60	.870		10.1	14	SN	3	C	1502	60	1.2	
UPIC	14	1500	1505	1515	N19	W62	.888		10.0	15	SF		P	1505	82	2.0	
BIG3	14	1648	1643	1656	N18	W60	.871		10.2	8	SB	3	C	1656	50	1.0	
PALE	14	1801E	1805U	1807J	N16	W63	.893		10.0	60	SF	2	C		61		
PALE	14	1844E	1844U	1855J	N13	W07	.211		14.3	11D	SF	2	C		63		
PALE	14	1844E		1855J	N17	E55	.826		18.9	11D	SF	2	C				
BIG3	14	1953	2002	2151	N24	E90	1.000		21.6	119	1N	2	C	2002	60		
BIG3	14	2005	2010	2108	N13	W64	.902		10.0	63	SN	2	C	2010	50	1.2	
PALE	14	2053E		2354J	N16	W63	.893		10.1	10	SF	1	C				
BIG3	14	2110	2110	2118	N12	W10	.232		14.1	8	SF	2	C	2110	60	.6	
PALE	14	2127	2129U	2139	N17	W76	.969		3.2	17	SN	3	C		72		
BIG3	14	2219	2222	2243	N10	E17	.314		15.2	31	SN	2	C	2222	60	.6	
BIG3	14	2330	2332	2338	N07	E71	.944		20.3	8	1N	2	C	2332	240		A
BIG3	14	2335	2343	JJ45J	N13	E70	.939		20.2	70D	1B	2	P	2343	180		H
MANI	14	2339E	2340U	2359J	N13	E75	.965		20.6	20D	1N	1	V		100	2.4	
LEAR	15	0537E	0537U	0546	N18	W69	.335		10.1	3D	SF	3	C				
WEND	15	0632	0643	J71J	N2J	W67	.923		10.2	38	1N		C	J643	100		A
UPIC	15	0640E		0700	N24	W72	.953		9.9	20D	1B		P	0640	82	3.4	
ATHN	15	0640E	0645U	0655	N20	W65	.910		10.4	15D	1B	3	C		127		
LEAR	15	0645E	0646U	0708J	N18	W68	.323		10.2	23D	SN	3	C		42		
UPIC	15	0650	0700	0720	N20	W70	.941		10.0	30	SN		P	J7JJ	61	2.1	
UPIC	15	J750	J81J	J85J	N22	E54	.825		19.4	60	1N		P	0810	143	2.9	F
WEND	15	0752	0754	0800	N18	W06	.280		14.9	8	SF		C	0754	22	.2	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. LONG. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONG.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
WEND	15	0805		0811)	N22	E53	.817		13.3	60	1N		C	0808	130	2.4	
MANI	15	0807E	0807U	0811)	N22	E49	.783		19.0	40	SF	1	V		40	.7	
UPIC	15	0815	0820	0840	N20	W09	.330		14.7	25	SF		P	0820	61	.7	
UPIC	15	0830	0835	0845	N20	W73	.957		9.9	15	1F		P	0835	61	2.3	
ATHN	15	0825E	0828U	0835	N07	E01	.074		15.5	100	SN	3	C		64		
WEND	15	1238E		1249	N12	E49	.759		19.2	110	SF		C	1239	40	.6	
ATHN	15	1242E	1246U	1253	S10	E35	.604		18.2	80	SN	3	C		80		
ATHN	15	1245E	1250U	1255	N10	E72	.950		20.9	100	SN	3	C		64		
WEND	15	1403	1411	1416	N22	W73	.957		10.1	7	SN		C	1411	28		
UPIC	15	1413E		1416)	N21	W77	.974		9.8	30	SN		P	1413	41	1.9	
WEND	15	1518	1524	1530)	N09	W03	.119		15.4	420	1N		C	1524	275	2.9	
UPIC	15	1520	1534	1600)	N10	W05	.151		15.3	400	1N		P	1534	204	2.2	FI
BIGB	15	1521	1526	1551	N19	W78	.977		9.8	30	SB	3	C	1526	80		A
BIGB	15	1522	1532	1611	N10	W05	.151		15.3	49	SN	3	C	1532	70	.7	A
BOUL	15	1524E	1531	1537	N20	W80	.984		9.6	130	SN	3	C		80		D
BIGB	15	1816	1822	1849	N07	W75	.965		10.1	33	SB	3	C	1822	60		A
BOUL	15	1820	1825	1840	N20	W80	.984		9.8	20	SB	3	C		80		D
PALE	15	1820E		1847	N17	E76	.969		21.5	270	SN	1	C				
RAMY	15	1822	1823	1835	N13	W77	.973		10.0	13	SB	3	C				
PALE	15	1838E	1838U	1857	N09	W06	.149		15.3	130	SF	2	C		29		
PALE	15	1848	1851	1854	N13	E65	.906		20.7	6	SF	2	C		27		
PALE	15	1849	2023	2125	N17	W76	.969		10.1	156	1B	2	C		32		
BOUL	15	1853	1858	1300)	N20	W80	.984		9.8	70	SB	3	C		80		D
PALE	15	1937E	1952U	2043	N13	W04	.142		15.5	660	SF	2	C		35		D
PALE	15	2118	2143U	2317	N09	E02	.112		16.0	119	SN	3	C		152		D
BIGB	15	2140	2204	2319	N08	E03	.103		16.1	99	SN	1	C	2204	110	1.1	
HOLL	15	2150	2154	2253	N08	E02	.036		16.1	63	SF	2	C		138		
PALE	15	2235	2242	2303)	N13	W76	.970		10.2	280	SN	3	C		36		
BIGB	15	2238	2243	2311	N17	W80	.984		9.9	33	SB	1	C	2243	50		A
PALE	15	2327	2352	0046)	N11	W14	.277		14.9	790	1N	3	C		314		D
BIGB	15	2328	2341	0044)	N08	W13	.241		15.0	760	SN	1	P	2341	130	1.4	
HOLL	15	2328	2352	0052)	N13	W14	.235		14.3	840	1N	2	C		289		
MANI	15	2332E	2333	2359)	N10	W13	.255		15.3	270	1B	1	V		200	2.2	F
HOLL	16	0040	0043	0058	N13	W08	.224		15.4	18	SN	2	C		77		
PALE	16	0040E	0041	0046)	N11	W08	.138		15.4	60	SN	3	C		140		D
HOLL	16	0042	0048	0052)	N20	E33	.666		19.0	100	SF	2	C		52		
LEAR	16	0048E	0048	0123	N11	W08	.198		15.4	320	SN	3	C		194		
PEKG	16	0112	0115	0134	N13	W21	.393		14.5	22	SB		C	0115	134	1.6	E
LEAR	16	0114	0123	0146	N12	W21	.387		14.5	32	SB	3	C		77		
LEAR	16	0122	0123	0136	S08	E13	.371		17.5	14	SF	3	C		22		
PEKG	16	0248	0253	0307	N20	W85	.995		9.7	19	SF		C	0258	42		D
LEAR	16	0254	0256	0306	N19	W85	.995		9.7	12	SF	3	C				
MANI	16	0417E	0418	0429	N12	W13	.273		15.2	120	SN	1	V		60	.7	F
LEAR	16	0418E	0419	0433)	N13	W18	.406		14.8	210	SN	3	C		169		
LEAR	16	0552	0552	0559)	S08	E16	.330		17.4	70	SN	3	C		55		
LEAR	16	0623	0636	0715	N15	W24	.448		14.5	56	SN	3	C		57		
ISTA	16	0622		0656	N10	W10	.213		15.5	34	SF						D
ISTA	16	0630		0643	N17	W22	.437		14.6	13	SF						D
WEND	16	0643	0647	0655	N17	W23	.449		14.6	12	SF		C	0647	53	.6	
WEND	16	0703	0707	0715	N10	E63	.891		21.3	13	SF		C	0707	47	1.1	
LEAR	16	0715	0718	0724	N12	E60	.867		20.8	9	SF	3	C		20		
LEAR	16	0758	0759	0803	N16	W25	.469		14.5	5	SF	3	C		50		
WEND	16	0818	0825	0827)	N10	E62	.883		21.0	30	SF		C	0825	50	1.1	
ATHN	16	0840E	0846U	0914	N13	W11	.258		15.5	340	1B	3	C		222		
LEAR	16	0844	0845U	0845)	N10	W14	.270		15.3	10	SN	3	C		64		
WEND	16	0845E	0851	0910	N09	W05	.139		15.0	250	SN		C	0851	41	.4	
WEND	16	0845E	0845	0924	N11	W12	.250		15.5	330	SB		C	0845	130	1.4	
MANI	16	0858	0859U	0909	N11	W04	.159		15.1	10	SF	1	V		30	.3	
BIGB	16	1823	1831	1847	N10	W30	.511		14.5	24	SF	3	C	1831	110	1.3	
BIGB	16	1945	1949	2016)	N12	W20	.372		15.3	310	SF	3	P	1949	70	.8	
BIGB	16	2051	2058	2124	N11	W32	.542		14.5	33	SN	3	C	2058	80	1.0	
BIGB	16	2102	2106	2151	N23	W35	.636		14.3	43	SN	3	C	2106	110	1.3	
HOLL	16	2239E	2256	0005	N09	W19	.340		15.5	860	2N	3	C		621		
BIGB	16	2239	2241	0032)	N08	W15	.273		15.8	1130	1B	3	P	2241	220	2.3	
PALE	16	2327	2352	0017)	N11	W14	.278		15.9	500	1N	3	C		313		D
PEKG	16	2330E	2330E	2340	N07	W11	.204		16.2	100	SN		P	2330	42	.4	B
PEKG	17	0009E	0015U	0015)	N07	W11	.234		16.2	60	SF		P	0015	42	.4	E
HOLL	17	0037	0048	0100)	N13	W09	.236		16.4	250	SN	3	C		75		
HOLL	17	0039	0040	0053	N12	W34	.573		14.5	14	SF	3	C		26		
PEKG	17	0054E	0054	0113	N14	W10	.260		16.3	130	SF		P	0054	13	.1	D

Hα SOLAR FLARES

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PEKG	17	0325E	0326	0344	N12	W36	.600		14.4	190	1N		C	0328	189	2.6	E
LEAR	17	0329E	0329U	0407	N12	W34	.573		14.6	380	1B	2	C		220		
PEKG	17	0352	0354	0359	N14	W35	.593		14.5	7	SF		C	0354	67	.9	ET
LEAR	17	0408E	0417	0440	N16	W09	.276		16.5	320	SN	3	C		164		
PEKG	17	0410	0415	0432	N14	W11	.271		16.3	22	SN		C	0415	105	1.2	E
LEAR	17	0544	0549	0620	N09	W30	.507		15.0	36	SN	3	C		171		
LEAR	17	0556	0602	0620	S05	W25	.440		15.4	24	SF	3	C		114		
PEKG	17	0608E	0613	0617	S05	W25	.440		15.4	90	SF		P	0613	71	.8	E
WEND	17	0635E		0641	N11	W31	.528		14.9	60	SF		C	0637	25	.3	
LEAR	17	0635	0636	0647	N10	W32	.539		14.9	12	SF	3	C		39		
WEND	17	0749		0758	N17	W27	.502		15.3	90	SN		C	0756	88	1.1	
LEAR	17	0752	0753	0802	N14	W30	.526		15.1	10	SF	3	C		28		
WEND	17	1213E		1347	N13	E40	.655		20.5	880	1N		C	1259	275	3.8	
ATHN	17	1238	1242	1400	N25	E40	.731		20.5	820	1B	4	C		206		D
RAMY	17	1241	1242	1621	N11	E38	.624		20.4	220	1B	3	C		331		
WEND	17	1249E		1320	N26	E22	.522		13.2	310	SF		C	1253	137	1.7	
BOUL	17	1540	1543	1545	N24	E42	.717		20.8	5	SF	3	C		60		
BOUL	17	1558E	1558U	1602	N24	E42	.717		20.8	40	SF	3	C		80		
BOUL	17	1605	1619	1628	N16	W18	.378		16.3	23	SF	3	C		120		
RAMY	17	1607	1617	1636	N14	W17	.346		16.4	29	SF	3	C		80		
BOUL	17	1635	1641U	1646	S03	W34	.565		15.1	11	SF	3	C		60		
BOUL	17	1735E	1735U	1838	N15	W43	.696		14.5	630	SN	3	C		80		
BOUL	17	1843E	1843U	1849	N06	W04	.091		17.5	60	SN	3	C		80		
MANI	17	2323E	2329U	2336	N10	W35	.581		15.3	130	SF	1	V		80	1.0	E
LEAR	17	2338E	2338U	0002	N10	W23	.436		15.8	240	1N	3	C		214		
LEAR	17	2344	2345	2349	S08	W08	.230		17.4	5	SF	3	C		33		
LEAR	18	0120	0135	0213	N10	W37	.609		15.3	53	1B	3	C		372		
MANI	18	0131E	0134	0138	N10	W36	.595		15.4	70	1N	1	V		220	2.3	F
LEAR	18	0142	0143	0233	N20	E16	.338		13.3	51	1N	3	C		194		
LEAR	18	0316	0318	0353	N12	W44	.702		14.8	43	SN	3	C		41		
LEAR	18	0319	0322	0329	N10	W37	.609		15.4	10	SF	3	C		34		
LEAR	18	0440	0446	0459	N12	W50	.771		14.4	13	SF	3	C		41		
LEAR	18	0451	0451	0455	N13	E34	.577		20.8	4	SF	3	C		26		
LEAR	18	0543	0607	0750	N10	W38	.622		15.4	121	1B	3	C		400		
ATHN	18	0600E	0606	0659	N10	W38	.622		15.4	590	1B	2	C		302		
MANI	18	0603E	0607	0640	N10	W38	.622		15.4	370	1N	1	V		300	4.0	F
LEAR	18	0607	0623	0630	N12	W26	.461		16.3	23	SF	3	C		28		
LEAR	18	0618	0624	0626	S08	W12	.275		17.4	8	SF	3	C		22		
ATHN	18	0714	0720	0741	N10	W38	.622		15.5	27	1N	2	C		238		
MANI	18	0725E	0725U	0730	N10	W38	.622		15.5	50	SF	1	V		50	.7	F
LEAR	18	0753	0755	0812	N11	W47	.736		14.8	19	SF	3	C		73		
LEAR	18	0811	0811	0829	N12	W39	.640		15.4	19	SN	3	C		93		
MANI	18	0812E	0812U	0818	N12	W38	.627		15.5	60	SF	1	V		30	.4	
ATHN	18	0812	0816	0828	N10	W38	.622		15.5	160	SN	1	C		143		D
RAMY	18	1304	1309	1409	N19	E06	.301		19.0	65	1N	3	C		410		
RAMY	18	1418	1432	1449	N15	W41	.673		15.5	31	SF	3	C		59		
RAMY	18	1427	1427	1448	N14	W29	.513		16.4	21	SF	3	C		32		
HOLL	18	1806E	1806U	1823	N20	E07	.322		19.3	170	1N	2	C		282		
HOLL	18	2129	2129	2322	N08	W46	.721		15.4	113	1N	3	C		163		
HOLL	18	2137	2230	2241	N15	W66	.915		14.0	640	1N	3	C		88		
HOLL	18	2233	2235	2303	S07	W21	.391		17.4	300	SN	3	C		53		
HOLL	18	2307	2307	2332	N14	E22	.416		20.6	25	SF	3	C		20		
LEAR	18	2340	2340	2351	N13	W33	.563		16.5	11	SF	3	C		28		
LEAR	19	0120	0120	0126	S07	W24	.434		17.3	6	SF	3	C		33		
LEAR	19	0141	0147	0206	N23	E23	.505		20.8	25	SN	3	C		86		
LEAR	19	0318	0333	0400	S02	W50	.768		15.4	42	SF	3	C		43		
LEAR	19	0321	0324	0330	N25	E04	.390		19.4	9	SF	3	C		21		
LEAR	19	0332	0333	0342	N29	E04	.452		19.4	10	SF	3	C		22		
LEAR	19	0338	0352	0425	N10	W51	.779		15.3	47	SN	3	C		137		
LEAR	19	0405	0408	0422	N23	E22	.435		20.8	17	SF	3	C		45		
LEAR	19	0420	0423	0429	N38	E12	.228		20.1	9	SF	3	C		64		
LEAR	19	0532	0533	0555	N23	E21	.484		20.8	24	SN	3	C		166		
LEAR	19	0626	0632	0643	S09	W22	.418		17.6	17	SF	3	C		53		
LEAR	19	0630	0638	0643	N07	E11	.206		20.1	13	SF	3	C		39		
LEAR	19	0642	0652	0733	N12	W51	.782		15.5	51	2B	3	C		444		D
ATHN	19	0647E	0651	0731	N10	W50	.769		15.5	440	1B	2	C		206		
LEAR	19	0648	0700	0708	N21	W00	.319		19.3	20	SF	3	C		83		
UPIC	19	0658E	0703	0837	N10	W49	.758		15.6	330	1N		P	0703	184	3.0	FIK
LEAR	19	0750	0753	0805	N25	W36	.661		16.6	15	SF	3	C		33		
LEAR	19	0837	0837	0843	N15	W64	.901		14.5	6	SF	3	C		20		

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. LONG. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
LEAR	19	0824	0826	0839	N24	W36	.655		16.7	15	SN	3	C		63		
ATHN	19	0826E	0830U	0831U	N24	W40	.638		16.4	50	SB	3	C		32		
ATHN	19	0826	0830	0846	N11	W51	.780		15.5	20	SB	3	C		80		
LEAR	19	0828	0828	0839	N10	W53	.800		15.4	10	SN	3	C		124		
LEAR	19	0900	0901	0904	S07	W28	.492		17.3	4	SF	3	C		30		
LEAR	19	0920	0922	0930	N24	W36	.655		16.7	10	SF	3	C		27		
ATHN	19	0941	0942	0953	N14	W61	.877		14.8	12	SN	3	C		64		
ATHN	19	0945E	0947U	0951	S10	E18	.371		20.8	60	SN	3	C		32		
ATHN	19	1251	1254	1307	N13	W53	.804		15.6	15	SB	3	C		95		
HOLL	19	1515	1540	1652	N10	W55	.821		15.5	37	1N	3	C		210		
RAMY	19	1516	1533	1640	N03	W57	.833		15.4	84	1B	3	C		189		
RAMY	19	1539	1543	1624	N17	W54	.819		15.6	45	SN	3	C		34		
HOLL	19	1544	1544	1609	N14	W68	.928		14.6	25	SN	3	C		38		
HOLL	19	1548	1550	1603	N25	W40	.703		16.7	15	SF	3	C		24		
RAMY	19	1634	1645	1659	N25	E15	.451		20.8	25	SF	3	C		33		
HOLL	19	1656	1713	1812	N08	W57	.839		15.4	76	1N	3	C		256		
RAMY	19	1706	1713	1815	N09	W60	.866		15.2	72	1B	3	C		289		
RAMY	19	1747	1820	1823	N11	W73	.958		14.3	36	SF	3	C		55		
HOLL	19	1751	1753	1943	S06	W32	.545		17.3	52	SF	3	C		37		
HOLL	19	1751	1754	1837	N22	W06	.349		19.3	46	SN	3	C		154		
RAMY	19	1756	1757	1818	S08	W33	.567		17.3	22	SF	3	C		35		
HOLL	19	2137	2249	0004	N14	W68	.928		14.8	147	1N	3	C		66		
HOLL	19	2234	2300	2326	N10	W63	.891		15.2	52	SF	3	C		86		
HOLL	19	2243	2253	2305	N23	W16	.435		18.7	22	SN	3	C		72		
HOLL	19	2255	2258	2305	N06	W35	.587		17.3	10	SF	3	C		34		
LEAR	19	2350	2350	0011	S09	W32	.557		17.6	21	SF	3	C		77		
LEAR	20	0230	0234	0244	N22	W19	.444		18.8	14	SN	3	C		112		
MANI	20	0232E	0233	0242U	N19	W19	.423		18.7	100	SN	1	V		50	.6	
LEAR	20	0326	0339	0408	N09	W68	.927		15.0	42	SN	3	C		109		
LEAR	20	0345	0345	0351	N12	E07	.207		20.7	6	SN	3	C		64		
LEAR	20	0501	0503	0525	N16	E06	.259		20.7	24	SF	3	C		47		
LEAR	20	0503	0508	0518	S02	W67	.921		15.2	15	SF	3	C		52		
LEAR	20	0526	0528	0534	N14	E08	.244		20.8	8	SF	3	C		62		
LEAR	20	0653	0705	0727	N12	W69	.934		15.1	34	SN	3	C		32		
ATHN	20	1058	1132	1227U	N11	W64	.893		15.7	890	1B	3	C		127		
RAMY	20	1441	1445	1513	S05	W44	.704		17.3	32	SN	3	C		106		
HOLL	20	1444	1444	1514	S05	W44	.704		17.3	30	SN	3	C		77		
UPIC	20	1445		1445U	S05	W45	.714		17.2		SF		P	1445	41	.6	
RAMY	20	1538	1552	1617	S07	W46	.729		17.2	39	SN	3	C		68		
BIGB	20	1548	1550	1610	S07	W47	.741		17.1	22	SF	3	C	1550	70	1.1	
BIGB	20	1611	1618	1905U	N10	W73	.981		14.7	1140	1B	3	P	1618	150		
HOLL	20	1612	1614	1739	N12	W79	.981		14.8	57	2B	3	C				
RAMY	20	1613	1614	1750	N12	W77	.974		14.9	97	2B	3	C				
HOLL	20	1643	1643	1653	S06	W44	.704		17.4	10	SF	3	C		33		
RAMY	20	1644	1644	1655	S06	W45	.716		17.3	11	SF	3	C		30		
RAMY	20	1728	1731	1743	N23	W27	.550		18.7	15	SN	3	C		103		
HOLL	20	1730	1732	1743	N22	W26	.531		18.8	13	SN	3	C		65		
HOLL	20	1735	1740	1748	S06	W45	.716		17.4	13	SF	3	C		34		
HOLL	20	2054	2056	2104	N14	W02	.206		20.7	10	SF	3	C		64		
HOLL	20	2248	2254	2303	N12	W13	.361		19.5	21	SF	3	C		81		
LEAR	20	2350	2350	0011	S09	W32	.557		18.6	21	SF	3	C		77		
LEAR	21	0023	0025	0033	N12	W04	.184		20.7	10	SF	3	C		23		
LEAR	21	0131	0132	0143	N24	W02	.374		20.3	12	SF	3	C		37		
LEAR	21	0313	0322	0337	N11	W07	.195		20.6	19	SN	3	C		129		
LEAR	21	0437	0439	0452	N22	W33	.612		18.7	15	SN	3	C		36		
PEKG	21	0443	0445	0452	N22	W32	.600		18.8	9	SF		C	0445	55	.8	E
LEAR	21	0455	0457	0535	N12	W07	.203		20.7	40	SF	3	C		81		
LEAR	21	0600	0605	0614	N24	W64	.910		16.5	14	SN	3	C		52		
ISTA	21	0603		0615	N25	W65	.917		16.4	12	SF						D
ATHN	21	0604E	0605	0610	N06	W70	.939		15.0	60	SB	3	C		64		D
LEAR	21	0604	0605	0614	N11	W70	.939		15.0	10	SN	3	C		13		
ISTA	21	0605		0613	N12	W30	1.000		14.5	8	SF						D
PEKG	21	0740	0744	0757	N25	W03	.391		21.1	17	SF		C	0744	63	.8	DH
ATHN	21	0752E	0755	0758U	N25	W01	.389		21.3	60	SB	3	C		80		
LEAR	21	0837	0853	0932	N16	W09	.283		20.7	55	SN	3	C		123		
MANI	21	0838E	0840	0855	N14	W04	.216		21.1	170	SN	1	V		70	.8	F
PEKG	21	0841	0911	0920	N13	W03	.243		20.7	33	SN		C	0911	147	1.6	E
PEKG	21	0841	0846		N13	W09	.243		20.7		SF		P	0846	126	1.4	EK
ATHN	21	0843E	0844	0927	N13	W09	.243		20.7	440	SB	3	C		111		D
WEND	21	1437	1440	1452	N26	W05	.412		21.2	15	SF		C	1440	94	1.1	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
WEND	21	1455	1511	1554	N14	W12	.288		20.7	59	SF		C	1511	119	1.3	E
BIGB	21	2010	2029	2058	N13	W15	.315		20.7	48	SF	3	C	2029	60	.6	
PALE	21	2314E	2330U	0014J	N14	W17	.351		20.7	600	SF	2	C		76		
LEAR	22	0054	0055	0101	N13	W19	.371		20.6	7	SF	3	C		22		
LEAR	22	0054	0055	0103	S08	W61	.880		17.5	15	SF	3	C		28		
PEKG	22	0317	0320	0323	N16	W17	.371		20.9	6	SN		C	0319	92	1.1	E
LEAR	22	0318	0320	0326	N15	W17	.362		20.9	9	SN	3	C		64		
LEAR	22	0415	0418	0445	S41	E55	.312		26.3	30	SF	3	C		43		
PEKG	22	0453	0454	0455	N17	W19	.406		20.8	3	SN		C	0454	42	.4	E
LEAR	22	0707	0719	0735	N16	W20	.439		20.8	28	SB	3	C		66		D
WEND	22	0715	0717	0733	N17	W18	.394		21.0	18	SF		C	0717	69	.8	
BUCA	22	0715	0719	0736	N17	W17	.382		23.6	21	SN		C	0713	64	.7	D
ATHN	22	0715	0721	0725	N13	W13	.362		21.3	11	SB	3	C		35		D
MANI	22	0721E	0721U	0724J	N16	W22	.435		20.7	30	SN	1	V		60	.7	
ATHN	22	0804E	0809	0822	N19	W13	.362		21.4	190	SB	3	C		64		D
WEND	22	0806	0811	0821	N13	W18	.357		21.0	15	SF		C	0811	100	1.1	
PEKG	22	0806	0811	0822	N13	W19	.371		20.9	16	SN		C	0813	63	.7	E
LEAR	22	0808	0810	0823	N12	W18	.349		21.0	15	SB	3	C		76		D
LEAR	22	0809	0819	0820	N09	W29	.495		20.2	11	SF	3	C		43		
PEKG	22	0810E	0813	0824J	N09	W90	1.000		15.6	140	2B		P	0813	189		Y
ISTA	22	0822		0914	N13	W17	.343		21.1	52	SN						D
ISTA	22	0850		0903	N12	W18	.343		21.0	13	SN						D
WEND	22	0930	0932	0944	N13	W18	.357		21.0	14	SF		C	0932	75	.8	
WEND	22	1332	1336	1345	S08	W26	.466		20.6	13	SF		C	1336	25	.3	
WEND	22	1334	1336	1345	N13	W21	.399		21.0	11	SF		C	1336	44	.5	
PALE	22	1303	1315	1319	N25	W25	.543		20.9	10	SF	3	C		13		D
BIGB	22	1947	2005	2033	N15	W26	.481		20.9	46	SN	3	C	2005	80	.9	
PALE	22	1947	1953	1959	N14	W26	.475		20.9	12	SF	3	C		42		D
BIGB	22	1951	1956	2055	N20	W50	.788		19.1	64	SN	3	C	1956	100	1.6	
PALE	22	1951	1954	2021	N20	W50	.788		19.1	30	SF	3	C		131		
PALE	22	2002	2004	2021	N15	W26	.481		20.3	13	1N	3	C		203		
PALE	22	2259	2301	2354	N17	W27	.507		20.9	55	SN	3	C		76		D
BIGB	22	2326	2328	2342	N11	W47	.737		19.5	16	SF	3	C	2328	60	.9	
BIGB	22	2358	0010	0145	N25	W50	.802		19.2	107	1B	3	C	0010	310	5.0	
ISTA	23	0828		0842	N23	W30	1.000		16.6	14	SN						G
BIGB	23	1601	1636	1912	S45	E37	.841		26.4	191	1N	3	C	1636	180	2.3	
BIGB	23	2023	2035	2114	N18	W42	.697		20.7	51	SN	3	C	2035	70	1.0	
BIGB	23	2119	2133	2310	N22	W26	.534		21.9	111	SN	3	C	2133	140	1.6	
PEKG	24	0003	0005	0012	N16	W44	.714		20.7	9	SN		P	0005	50	.8	E
BIGB	24	0027	0029	0033	N13	W43	.695		20.8	12	SN	3	C	0028	40	.6	
PEKG	24	0032	0040	0053J	N17	W44	.717		20.7	210	SN		P	0035	101	1.6	FU
BIGB	24	0043	0047	0047J	N18	W44	.721		20.7	40	SN	3	P	0047	100	1.4	
MANI	24	0045E	0045U	0100J	N18	W45	.732		20.7	150	SN	1	V		60	1.0	F
LEAR	24	0114E	0208	0344	N15	W44	.712		20.8	150	1B	3	C		369		D
PEKG	24	0214E	0222	0322	N14	W44	.709		20.8	680	1N		C	0222	172	2.7	FU
LEAR	24	0347	0355	0414	N15	W45	.723		20.8	27	SF	3	C		54		
PEKG	24	0448	0458	0532	N14	W48	.754		20.6	44	SN		P	0502	42	.7	E
PEKG	24	0525	0530		N17	W48	.761		20.6		SF		C	0530	34	.5	E
PEKG	24	0525	0555	0614	N17	W48	.761		20.6	39	SN		C	0554	67	1.2	E
ISTA	24	0700E		0845J	N18	W45	.732		20.9	1050	2N						U
PEKG	24	0700	0715	0738	N25	W44	.747		21.0	38	SN		P	0715	101	1.7	E
ISTA	24	0700E		0845J	N23	W40	.697		21.3	1050	1N						E
PEKG	24	0715E	0715	0715J	N17	W45	.729		20.9		SN		P	0715	25	.4	D
LEAR	24	0716	0903	0930J	N17	W47	.750		20.8	1340	1B	3	C		352		
ISTA	24	0720		0749	N17	E90	1.000		1.1	29	1B						D
MANI	24	0725E	0727U	0733J	N15	E72	.352		23.7	80	SN	1	V		20	.5	
ATHN	24	0726	0728	0735	N14	E74	.961		29.9	9	SB	4	C		48		D
PEKG	24	0727	0728	0731	N17	E77	.975		30.1	3	SF		C	0728	17		D
PEKG	24	0838	0907	0946	N19	W46	.745		20.9	68	2B		P	0907	526	8.7	FITWZ
ATHN	24	0846	0852	0908J	N18	W48	.764		20.8	220	1B	4	C		157		
ATHN	24	0846	0852	1222	N23	W41	.708		21.3	216	SB	4	C		80		
LEAR	24	0848	0904	0933J	N25	W49	.794		20.7	420	SB	3	C		64		
ATHN	24	1205E	1228U	1324	N19	W50	.786		20.8	790	SN	4	C		80		
ATHN	24	1224	1228	1230J	N59	W09	.845		23.8	60	SN	4	C		32		D
RAMY	24	1323	1353	1353J	N18	W51	.794		20.7	300	2B	3	C		663		
HOLL	24	1324	1330	1344	N15	W49	.767		20.9	20	SN	2	C		54		
ATHN	24	1326	1331	1345	N18	W48	.764		21.0	19	SN	4	C		95		
ATHN	24	1346	1357	1400J	N19	W50	.785		20.8	140	2B	4	C		298		D
HOLL	24	1346	1411	1735	N18	W50	.784		20.8	223	2B	3	C		1078		

Hα SOLAR FLARES

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONO.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
HOLL	24	1351	1355	1515	N25	W51	.812		20.8	84	SB	3	C		130		D
RAMY	24	1352	1408	1736	N18	W51	.794		20.8	224	3B	3	C		1266		
BOUL	24	1400E	1445U	1800J	N20	W50	.789		20.8	2400	3B	3	C		1600		
BIGB	24	1443E	1446	1732	N15	W50	.778		20.9	1630	2B	3	P	1446	330	5.3	
BOUL	24	1631E	1644U	1800J	S42	E25	.758		26.6	890	1B	3	C		320		
RAMY	24	1637	1639	1646	S13	W46	.743		21.2	9	SF	3	C		26		
BIGB	24	1651E	1651	1908	S45	E26	.790		26.7	1370	1B	3	P	1651	220	2.5	
HOLL	24	1654	1655	1823	S47	E24	.800		26.5	95	2N	3	C		450		
RAMY	24	1700E	1701U	1806	S43	E23	.759		26.4	660	2N	3	C		515		
BOUL	24	1721	1800U	1800J	N15	W53	.808		20.7	330	SB	3	C		120		D
BIGB	24	1929	1931	1946	N02	E69	.933		30.0	17	SN	3	C	1931	60		
RAMY	24	1929	1931	1947	N01	E69	.933		30.0	18	SN	3	C		41		
HOLL	24	1930	1931	1939	N01	E71	.945		30.1	9	SN	3	C		31		
BIGB	24	2019	2025	2220	S01	E69	.934		30.0	121	SN	3	C	2025	70		
HOLL	24	2019	2022	2216	S01	E69	.934		30.0	117	SN	3	C		90		
RAMY	24	2020E	2026	2034J	N00	E70	.940		30.1	140	SB	3	C		213		
HOLL	24	2107	2113	2140	N15	W53	.808		20.3	33	SN	3	C		26		
BIGB	24	2103	2117	2141	N14	W53	.807		20.9	32	SN	3	C	2117	90	1.5	
PALE	24	2118E	2119U	2137	N15	W54	.818		20.8	190	SF	2	C		101		
HOLL	24	2136	2138	2153	N17	W02	.264		24.8	17	SF	3	C		40		
HOLL	24	2215	2231	2248	N17	W55	.830		20.8	33	SN	3	C		64		
PALE	24	2222	2230	2302	N15	W54	.818		20.9	40	SF	2	C		90		
HOLL	24	2224	2232	2235	N01	E74	.961		30.5	11	SF	3	C		14		
HOLL	24	2320	0034	0056	N16	W55	.829		20.8	96	SB	3	C		99		
BIGB	24	2340	0035	0047J	N13	W55	.825		20.9	670	SB	3	P	0035	80	1.4	
PALE	25	0026E	0035U	0125J	N17	W57	.849		20.7	590	SN	2	C		127		
PALE	25	0136E	0200	0201	N15	W56	.837		20.9	250	SF	2	C		34		
PEKG	25	0208	0210	0214	N16	W61	.881		20.5	6	SN		C	0210	46		E
LEAR	25	0228	0230	0243	N14	W56	.836		20.3	15	SF	3	C		34		
PEKG	25	0252	0255	0259	N18	W61	.883		20.5	7	SN		C	0255	25	.6	D
PEKG	25	0308	0311	0315	N21	E65	.914		30.0	7	SN		C	0311	59		D
PEKG	25	0450	0500	0505	N17	W57	.849		20.9	15	SN		P	0500	55	1.2	E
PEKG	25	0530	0540	0605	N16	W60	.873		20.7	35	1B		P	0540	168	3.7	FU
ISTA	25	0640		0925	N15	W60	.872		20.8	105	3B						Z
ISTA	25	0645		0745	N02	E65	.905		30.2	60	2N						F
LEAR	25	0909	0912	0926J	N26	W57	.865		21.1	170	SN	3	C		107		
RAMY	25	1234	1237	1243	S08	W60	.871		21.0	9	SF	3	C		20		
RAMY	25	1504	1509	1514	N14	W64	.902		20.8	10	SB	3	C		80		
HOLL	25	1504	1508	1515	N16	W63	.896		20.3	11	SB	3	C		51		D
HOLL	25	1537	1545	1638	N17	W64	.934		20.9	61	SB	4	C		63		D
RAMY	25	1541	1550	1656	N13	W64	.901		20.9	75	1B	3	C		134		D
BIGB	25	1545	1552	1643	N11	W62	.885		21.0	58	1B	3	C	1552	100	2.2	
HOLL	25	1750	1801	1804	N17	W67	.924		20.7	14	SN	3	C		15		
HOLL	25	1815	1816	1859	N17	W67	.924		20.7	44	SN	3	C		41		
BIGB	25	1943	1951	2038	N35	E65	.906		30.7	55	1N	3	C	1951	110	2.7	
PALE	25	1946E	1949U	2027J	N07	E61	.875		30.4	410	1N	3	C		141		D
HOLL	25	2001E		2030	N06	E61	.875		30.4	230	SN	3	C		70		
BIGB	25	2257	2312	2338	N05	E64	.838		30.8	41	SF	3	C	2312	50	1.2	
PEKG	25	2346E	2352	2352J	N34	E63	.891		30.7	60	SF		P	2352	29	.7	E
BIGB	25	2346	0024	0046J	N05	E64	.898		30.8	600	1N	3	C	2351	120	2.8	
MANI	25	2347E	2348U	2352J	N02	E54	.809		30.0	50	SF	1	V		50	.8	
PEKG	26	0015	0020	0040	N04	E59	.857		30.4	25	1N		C	0020	130	2.6	F
MANI	26	0018E	0020U	0027J	N02	E54	.809		30.1	90	SF	1	V		120	2.0	F
LEAR	26	0025	0027	0036	N04	E61	.874		30.6	11	SF	3	C		57		
PEKG	26	0051	0054	0100	N04	E62	.883		30.7	9	SB		C	0054	53	1.3	E
LEAR	26	0052E		0059	N03	E63	.891		30.8	70	SF	3	C		19		
LEAR	26	0053	0054	0101	N17	W76	.971		20.3	8	SF	3	C				
PEKG	26	0242E	0252	0312J	N16	W74	.962		20.6	300	SN		C	0252	38		E
PEKG	26	0242E	0247		N16	W74	.962		20.6		SN		C	0248	34		EK
PEKG	26	0251	0252	0312	N03	E56	.829		30.3	21	SN		C	0252	67	1.2	E
PEKG	26	0311E	0313	0330	N04	E61	.874		30.7	190	1B		P	0313	101	2.1	E
LEAR	26	0312	0312	0347	N03	E60	.866		30.6	35	SN	3	C		41		
PEKG	26	0352	0353	0356	N16	W74	.962		20.6	4	SF		C	0353	21		E
PEKG	26	0604E	0605	0610	N16	W76	.971		20.6	60	SN		P	0605	21		E
LEAR	26	0605	0616	0640	N17	W76	.971		20.6	35	SN	3	C				
ISTA	26	0613E		0811	N15	W75	.966		20.6	1230	3B						Z
ISTA	26	0610E		0700	N03	E55	.819		30.4	500	3B						F
ATHN	26	0614E	0618	0629J	N16	W72	.953		20.3	150	SB	3	C				D
WEND	26	0621	0636	0652	N02	E54	.809		30.3	31	SB		C	0636	100	1.7	
LEAR	26	0622	0633	0705	N02	E53	.798		30.2	44	1B	3	C		177		

Hα SOLAR FLARES

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PEKG	26	0629E	0634	0656	N03	E54	.809		30.3	270	1B		C	0634	147	2.6	E
ISTA	26	0710		0730	N02	E67	.920		1.3	20	2B						V
WEND	26	0716	0718	0730	N04	E60	.865		30.8	14	2B		C	0718	300	6.2	AV
LEAR	26	0716	0719	0743	N04	E57	.838		31.6	24	1B	3	C		274		
PEKG	26	0716E	0720E	0730	N05	E57	.839		30.6	140	SB		P	0727	25	.5	E
AIHW	26	0717	0722	0744	N52	E03	.772		26.5	27	SB	1	C		127		D
PEKG	26	0736	0743	0746J	N17	W84	.994		28.0	100	SB		P	0742	38		D
WEND	26	0907	0909	0919	N03	E43	.682		29.6	12	SF		C	0939	44	.6	E
RAMY	26	1357E	1451	1448	N12	W74	.961		28.9	2310	2B	3	C				
WEND	26	1139	1221	1246J	N16	W75	.967		28.9	670	2N		C	1221	400		IZ
HOLL	26	1306F	1306U	1412	N17	W74	.962		21.0	660	SB	2	C				D
RAMY	26	1432	1432	1438	N15	E35	.603		29.2	6	SF	3	C		32		
HOLL	26	1659	1733	1736	N16	W78	.978		28.9	7	SN	3	C				
HOLL	26	1737	1737	1743	N16	W79	.982		28.8	6	SN	3	C				
RAMY	26	1738	1739	1750	N13	W73	.981		28.8	12	SN	3	C				
HOLL	26	1743	1757	1824	N04	E47	.731		30.3	33	SN	3	C		77		
HOLL	26	1949	2038	2346	N32	E45	.737		33.2	117	SB	3	C		136		
BIGJ	26	1956	2010	2043	N07	E48	.745		30.4	97	SB	3	C	2010	90	1.4	
BIGB	26	1914	1929	1944	N22	E42	.715		30.0	30	SF	3	C	1923	80	1.1	
HOLL	26	1923	1926	1938	N21	E44	.732		30.1	15	SF	3	C		49		
PALE	26	2010E	2014U	2040	N04	E44	.695		30.1	390	SN	4	C		137		D
HOLL	26	2346	2319	2134	N32	E59	.857		1.4	78	SN	3	C		137		
PEKG	26	2352	0005	0011	N05	E63	.891		1.7	19	SN		C	0005	21	.5	D
PALE	27	0304	0312	0332J	N16	E35	.608		23.8	280	SF	2	C		58		D
PEKG	27	0328	0331	0400	S09	W85	.997		23.8	32	1N		P	0332	46		D
PEKG	27	0838E	0838	0905J	N16	W90	1.000		20.6	270	2B		C	0838	231		Y
HOLL	27	1750	1754	1754	N15	W90	1.000		21.0	4	SB	3	C				
PEKG	28	0640E	0640	0643	N04	E25	.424		30.2	30	SF		P	0640	21	.2	D
PEKG	28	0812	0815	0825J	N33	E36	.588		1.3	140	SN		P	0818	25	.3	E
HOLL	28	1729	1732	1740	N03	E19	.327		30.2	11	SF	3	C		27		
RAMY	28	1905	1907	2005	N03	E18	.310		30.1	61	SN	3	C		92		
HOLL	28	1905	1917	1918	N02	E17	.292		30.1	13	SN	3	C		53		
RAMY	28	2015	2016	2053	N03	E17	.299		30.1	38	SF	3	C		46		
BOUL	28	2235E	2213U	2234J	N16	W93	1.000		22.2	330	1B	2	G				
HOLL	28	2218	2221	2228	N08	W61	.476		24.4	10	SF	3	C		19		
PEKG	29	0413	0419	0422	N03	E12	.210		30.1	3	SN		C	0418	84	.9	E
LEAR	29	0413	0422	0431	N31	E13	.225		33.2	18	SF	3	C		115		
ISTA	29	0627		0539	S09	E62	.888		3.9	17	SN						D
PEKG	29	0633	0635	0640	S09	E64	.903		4.1	7	SF		C	0635	34	.7	E
ISTA	29	0633		0645	S15	E20	.431		30.8	12	SN						D
PEKG	29	0635E	0635	0639J	S16	E22	.463		30.9		SN		P	0635	13	.1	D
ISTA	29	0645		1654	N31	E15	.253		30.4	9	SF						D
PEKG	29	0700	0705	0713	S16	E21	.453		30.9	13	SN		P	0705	29	.3	D
LEAR	29	0701	0704	0714	S16	E21	.453		30.9	13	SF	3	C		25		
ISTA	29	0702		0730J	S15	E20	.431		30.8	280	SN						BD
LEAR	29	0814	0815	0825	S09	E62	.888		4.3	11	SF	3	C				
PEKG	29	0815	0821	0830	S08	E63	.895		4.1	15	SF		P	0821	8	.2	D
BIGB	29	1454	1510	1725	S08	W58	.853		25.3	151	SF	3	C	1520	60	1.2	
BOUL	29	1513E	1513U	1523J	S08	E55	.825		3.8	100	SN	2	C		40		
BOUL	29	1513E	1513U	1523J	N17	E77	.975		5.4	100	SN	2	C				
BIGJ	29	2131	2139	2224	N13	E72	.954		5.3	57	SF	3	C	2139	90		
HOLL	29	2134	2142	2154	N17	E74	.963		5.4	20	SF	3	C				
LEAR	29	2340	2342	2353	N17	E73	.955		5.5	13	SF	3	C				
LEAR	30	0124	0126	0135	N15	E73	.942		5.3	11	SF	3	C		11		
PEKG	30	0545	0548	0553	N01	E02	.035		30.4	8	SN		P	0549	29	.7	EH
LEAR	30	0550	0552	0559	S01	E03	.057		30.5	8	SN	3	C		53		
LEAR	30	0744	0747	0814	N17	E68	.932		5.4	30	SF	3	C		20		
RAMY	30	1220	1221	1254	N17	E65	.912		5.4	34	SN	3	C		57		
BIGJ	30	1613	1624	1711	N14	E64	.907		5.5	71	SN	3	C	1624	60	1.4	

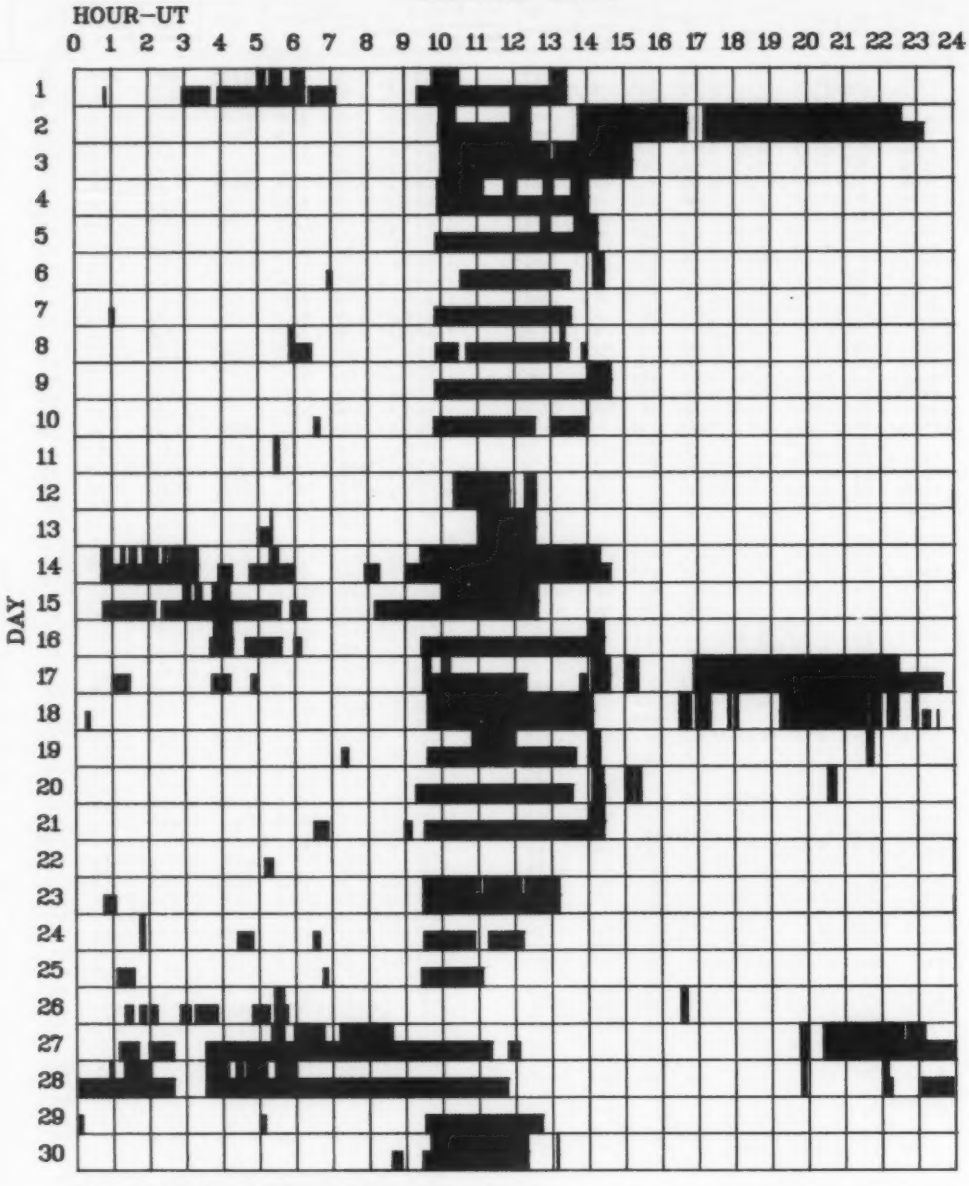
"REMARKS":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

APRIL 1981



Observatories included in total patrol:

Athens	Bucharest	Istanbul	Manila	Ramey
Big Bear	Holloman	Learmonth	Palehua	Upice
			Peking	Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

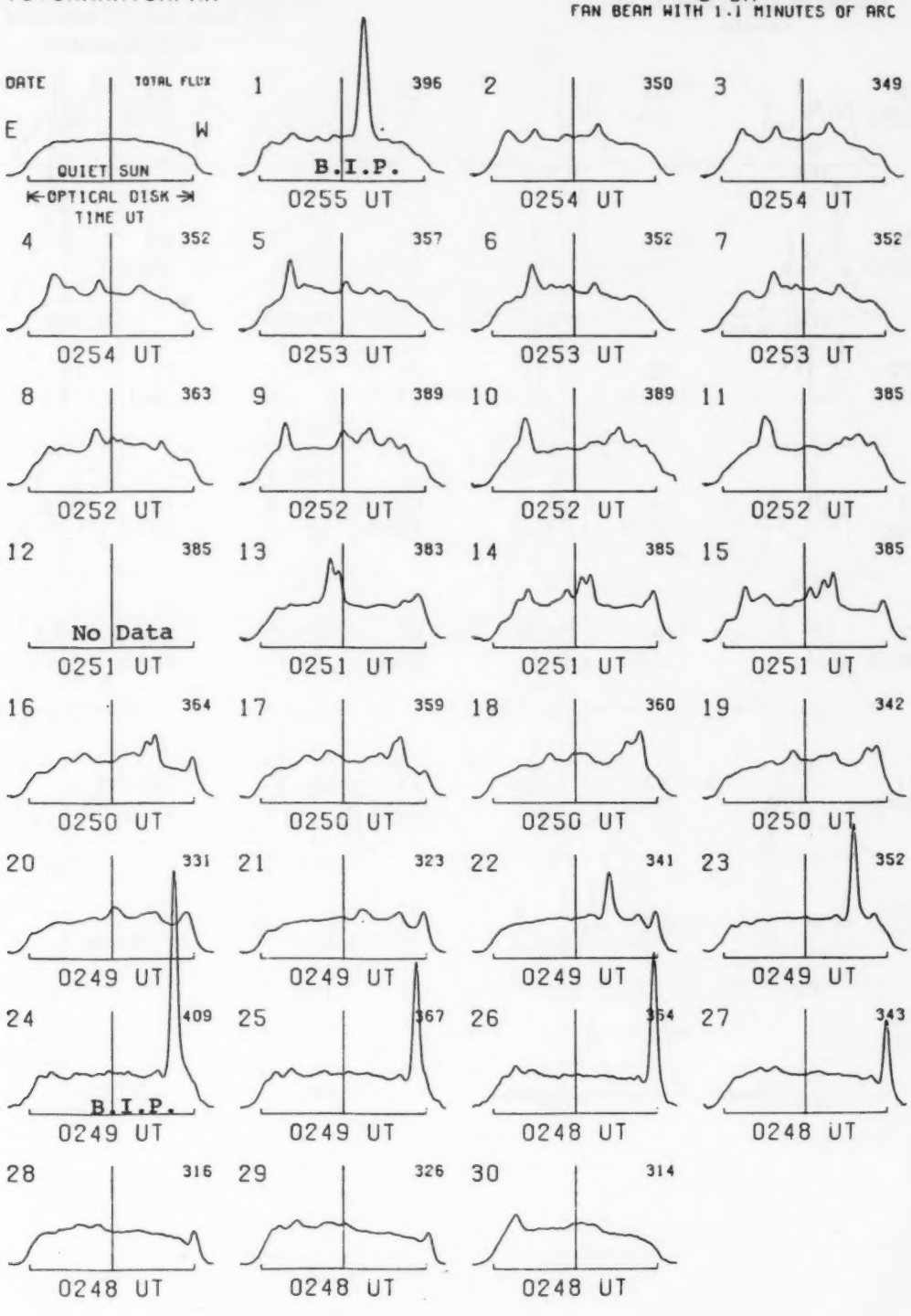
EAST-WEST SOLAR SCANS

APRIL 1981

TOYOKAWA, JAPAN

3 CM

FAN BEAM WITH 1.1 MINUTES OF ARC

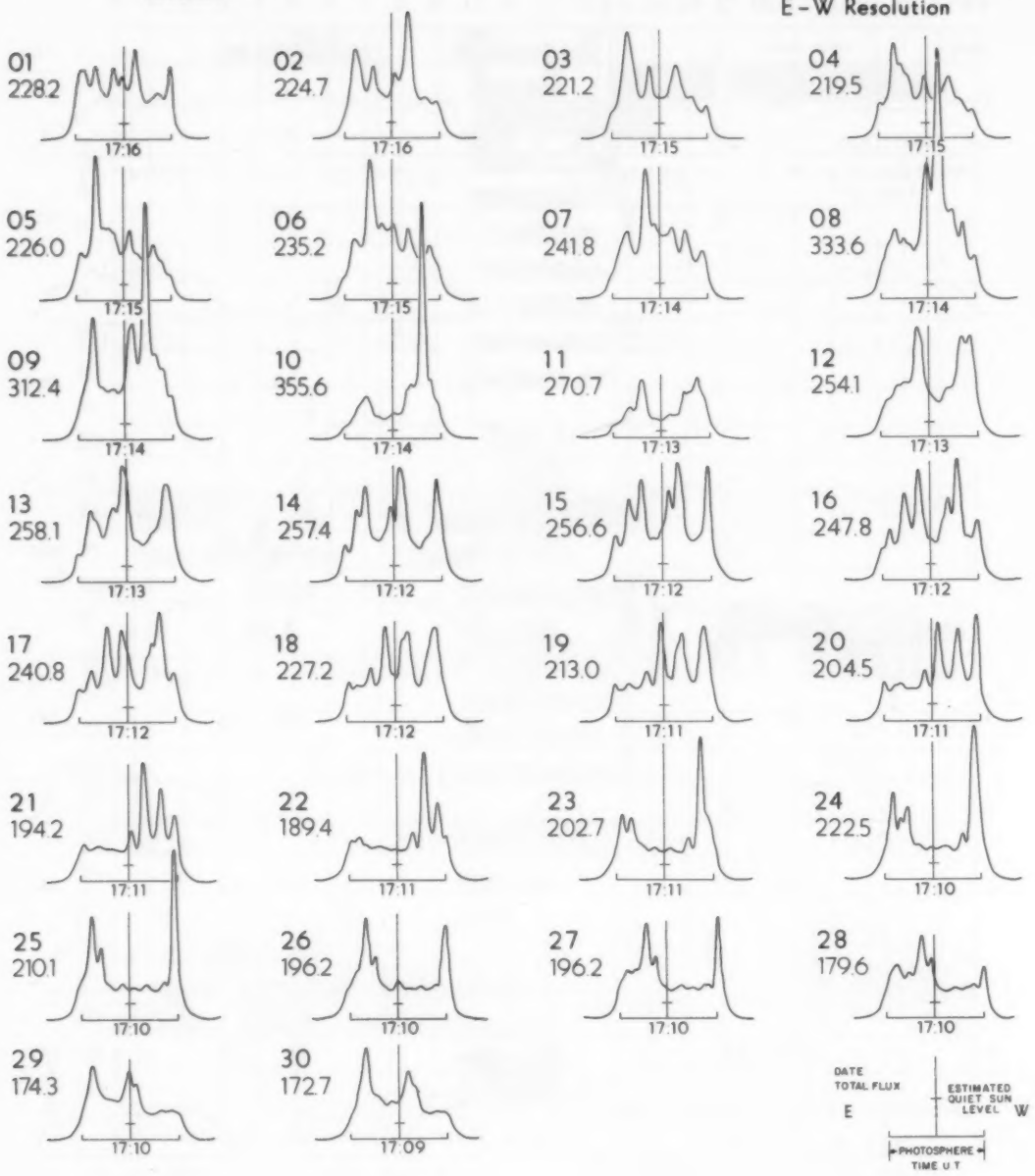


EAST-WEST SOLAR SCANS

APRIL 1981

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

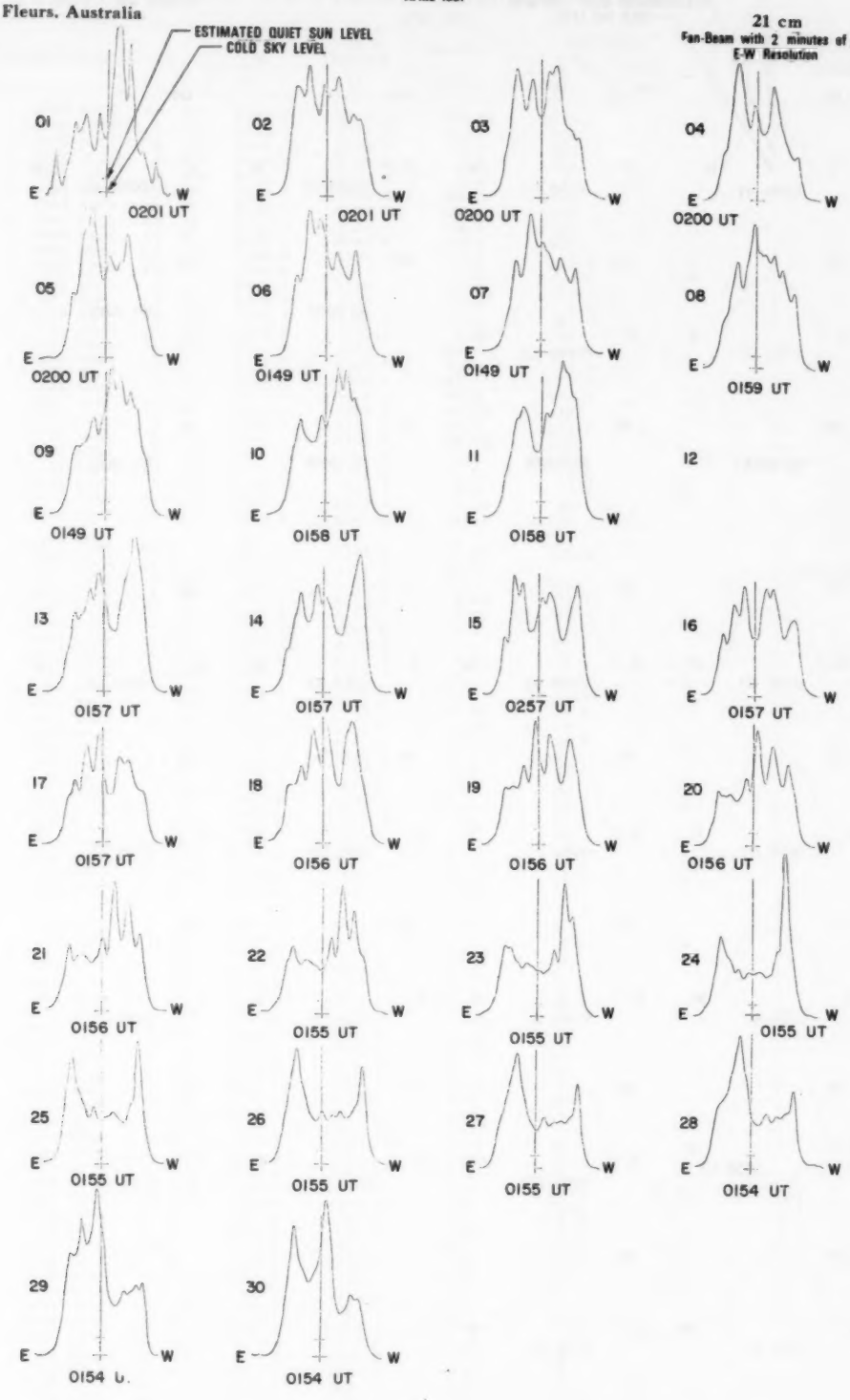


EAST-WEST SOLAR SCANS

APRIL 1981

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc E-W Resolution

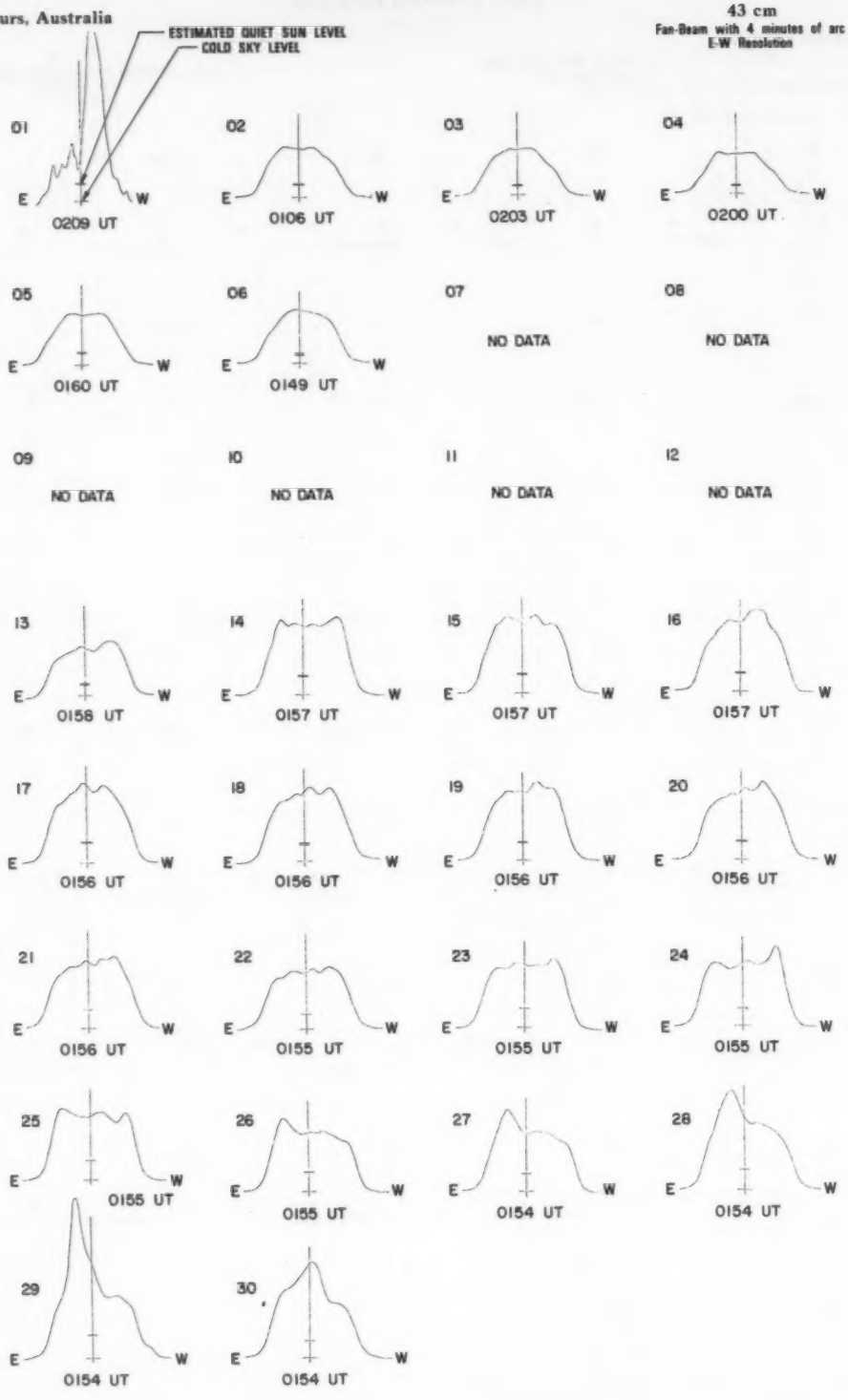


EAST-WEST SOLAR SCANS

APRIL 1981

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
01	2695	PENT	47 GB	0107.0	0154.3	49.0D	2090.0			
	8800	LEAR	4 S/F	0107.5	0110.8	13.0	110			
	8800	PALE	4 S/F	0109.6	0110.8	6.5	100			
	2695	PALE	4 S/F	0109.8	0116.6	6.0	38			
	2695	LEAR	4 S/F	0111.1	0116.8	9.4	48			
	8800	LEAR	49 GB	0120.5	0146.1	105.3	4800			
	2695	LEAR	49 GB	0120.5	0154.3	105.3	1800			
	2695	PALE	49 GB	0125.1	0155.1	96.9	2000			
	8800	PALE	49 GB	0125.1	0146.0	112.5	5800			
	2800	OTTA	20 GRF	1150.0	1225	50.0	6.6	3.3		
	2800	OTTA	240 R	1242.0	1245	3.0	4.0	2.0		
	8400	BERN	3 S	1242.4	1245.2	23.0	51.0			
	3200	BERN	3 S	1242.6	1245.1	23.0	9.0			
	8800	ATHN	4 S/F	1242.8	1245.1	5.3	41			
	2695	ATHN	4 S/F	1242.8	1245.3	6.0D	84			
	2800	OTTA	21 GRF	1330.0	1505	500.0	22.4	15.0		
	8400	BERN	3 S	1334.8	1336.1	15.0	18.0			
	3200	BERN	3 S	1335.0	1414.9	115.0	374.0			
	2800	OTTA		1359.0	1419	40.0	335.0			
	2695	SGMR	47 GB	1359.1	1415.1	34.4D	500			
	8400	BERN	3 S	1400.0	1416.1	90.0	164.0			
	8800	SGMR	4 S/F	1403.1	1416.0	29.0D	200			
	8400	BERN	20 GRF	1539.5	1542.6	13.0	28.0			
	3200	BERN	20 GRF	1539.7	1542.7	13.0	11.0			
	2800	OTTA	2 S/F	1540.0	1541.7	10.0	7.8	3.9		
	2695	SGMR	4 S/F	1540.6	1543.6	7.5D	89			
	8800	SGMR	4 S/F	1541.0	1542.8	11.1D	29			
02	8400	BERN	46 C	1057.5	1104.8	60.0	460.0			
	3200	BERN	46 C	1058.3	1101.7	60.0				ONLY PAPER REC
	8800	ATHN	4 S/F	1058.8	1104.8	11.7	370			
	2695	ATHN	4 S/F	1059.3	1102.0	8.0D	60			
	2695	SGMR	8 S	1100.0	1109.5	2.0D	65			
	8800	SGMR	4 S/F	1101.5E	1105.0	8.8	98			
	8800	ATHN	8 S	1137.3	1138.0	1.7	21			
	2800	OTTA	1 S	1201.0	1201.7	7.0	4.4	2.2		
	2800	OTTA	23 GRF	1600.0	1708	158.0	16.4	8.2		
	3200	BERN	21 GRF	1631.1	1636.6	22.0U	41.0			
	8400	BERN	21 GRF	1635.3	1636.7	12.0U	30.0			
	2695	SGMR	4 S/F	1635.8	1637.3	7.5D	24			
	2800	OTTA	3 S	1636.0	1637	2.0	18.0	8.6		
	8800	SGMR	4 S/F	1636.3	1636.6	2.7	11			
	8800	PALE	47 GB	1658.6	1711.1	30.0	65			
	2695	PALE	47 GB	1658.8	1659.3	1.2	38			
	2800	OTTA	23 GRF	1923.0	1952	190.0	13.8	6.0		
	2800	OTTA	46F C	1924.0	1924.5	3.0	27.0			
	2695	PALE	8 S	1924.3	1924.5	1.3	29			
	2800	OTTA	22 GRF	2055.0	2101	30.0	8.0	2.8		
	2800	OTTA	22 GRF	2133.0	2137	17.0	4.4	2.6		
	2695	PENT	21 GRF	2310.0	2320	75.0	10.0	3.4		
	2695	PENT	1 S	2359.0	2402	5.0	4.0	2.0		
03	2695	MANI	4 S/F	0017.0	0018.1	3.5D	22			
	2695	PENT	1 S	0126.5	0127.3	1.5	6.8	3.4		
	8800	ATHN	4 S/F	0446.6	0449.3	5.4D	13			
	2695	ATHN	4 S/F	0446.6	0450.0	5.5D	83			
	8400	BERN	47 GB	0902.0	1019.6	330.0	610.0			
	3200	BERN	47 GB	0902.0	1019.8	360.0	600.0			
	2695	ATHN	4 S/F	0916.6	0916.8	9.4D	51			
	2695	ATHN	47 GB	0934.3	1020.0	74.7D	770			
	2695	LEAR	47 GB	0936.1	0948.1	28.9D	500			
	8800	ATHN	47 GB	0939.3	1020.0	69.7	830			
	8800	LEAR	4 S/F	0940.8	0949.8	17.8D	370			
	8800	MANI	47 GB	0943.5	0949.5	8.5	560			
	2695	MANI	47 GB	0943.5	0948.5	8.5D	310			
	8800	ATHN	4 S/F	1126.1	1127.6	6.9	57			
	2695	ATHN	4 S/F	1126.3	1127.8	6.8D	89			
	2800	OTTA	21 GRF	1140.0	1220	285.0D	25.4			
	2695	ATHN	4 S/F	1151.6	1201.3	15.2D	110			
	2800	OTTA	4 S/F	1153.7	1154.5	2.0	18.0	10.0		
	2800	OTTA	4A S/F	1200.9	1201.2	5.0	22.4	6.0		
	2800	OTTA	8 S	1201.2	1201.2	.1	125.0			
	2800	OTTA	1 S	1234.5	1235.3	1.5	2.6	1.3		
	2800	OTTA	240AR	1635.0	1655	20.0	7.6	3.8		
	2800	OTTA	40 F	1640.0	1641.9	11.0	8.8			
	2800	OTTA	4 S/F	1747.0	1753.7	16.0	71.4	24.6		
	2695	PALE	8 S	1753.3	1754.0	1.5	41			
	2800	OTTA	30 PBI	1803.0	1803	100.0	4.4			
	2800	OTTA	45 C	1808.0	1847	45.0	58.0	17.4		
	2695	SGMR	4 S/F	1811.0	1818.0	17.0D	33			
	8800	PALE	4 S/F	1839.1	1846.8	11.7	110			
	2695	PALE	8 S	1846.3	1847.1	2.0	38			
	2800	OTTA	40 F	2021.0	2026	5.2	23.2			
	2800	OTTA	40 F	2038.0	2041.2	7.0	8.0			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
03	2695	PENT	21 GRF	2310.0	2350	150.0	32.0	16.0		
	2695	LEAR	47 GB	2325.0	2330.5	22.7	45			
	2695	PENT	40 F	2327.0	2330.7	5.0	30.0			
	8800	LEAR	47 GB	2327.6	2350.1	20.9	33			
	2695	PENT	2 S/F	2417.2	2417.5	3.0	7.2	3.6		
04	8800	LEAR	4 S/F	0224.5	0225.1	2.3	18			
	2695	LEAR	8 S	0224.8	0225.1	2.0	11			
	2695	LEAR	4 S/F	0230.5	0231.8	2.3	11			
	8800	LEAR	4 S/F	0230.5	0231.8	2.5	52			
	8800	MANI	47 GB	0453.1	0502.3	19.0	4200			
	8800	LEAR	49 GB	0501.5	0502.3	4.3	4200			
	8800	ATHN	47 GB	0501.6	0503.0	5.0	1600			
	2695	ATHN	47 GB	0501.6	0503.0	5.9D	810			
	2695	LEAR	49 GB	0501.8	0502.6	4.5	1300			
	2695	MANI	47 GB	0501.8	0502.3	10.3D	9800			
	3200	BERN	45 C	0757.2	0808.8	25.0	78.0			
	8400	BERN	45 C	0800.6	0808.8	20.0	73.0			
	8800	MANI	47 GB	0801.6	0836.0	47.5	320			
	2695	MANI	47 GB	0801.6	0836.1	47.7D	91			
	2695	LEAR	47 GB	0802.0	0808.8	8.1	84			
	8800	ATHN	4 S/F	0802.1	0809.5	11.9	67			
	2695	ATHN	4 S/F	0802.3	0809.6	10.0D	71			
	8800	LEAR	47 GB	0802.5	0808.8	7.8	63			
	3200	BERN	21 GRF	0826.0	0835.6	270.0	98.0			
	8400	BERN	21 GRF	0827.6	0835.5	270.0	196.0			
	8800	ATHN	4 S/F	0829.5	0835.6	24.0	66			
	2695	LEAR	47 GB	0830.1	0835.6	20.9	100			
	8800	LEAR	47 GB	0830.1	0835.6	21.5	200			
	2695	ATHN	4 S/F	0830.5	0835.3	24.5D	87			
	2695	LEAR	47 GB	1001.1	1003.1	2.7	31			
	2800	OTTA	20 GRF	1130.0	1145	260.0D	16.0			
	2800	OTTA	8 S	1806.8	1807	.6	4.2	2.1		
	2800	OTTA	240 R	1915.0	1930	15.0	3.2	1.6		
	2800	OTTA	240 R	2120.0	2125	5.0	3.2	1.2		
	2695	PENT	21 GRF	2155.0	2235	105.0	7.4	3.7		
	2695	PENT	3 S	2200.0	2201.8	6.0	26.8	6.7		
	2695	PALE	8 S	2201.1	2201.8	1.2	28			
	8800	PALE	8 S	2201.1	2201.6	1.4	32			
	2695	LEAR	4 S/F	2310.5	2312.8	5.0	19			
	2695	PENT	1 S	2311.0	2313	5.0	7.6	3.4		
	2695	PALE	8 S	2312.6	2312.6	.2	15			
	2695	LEAR	8 S	2313.6	2313.6	.7	15			
05	2695	PENT	23 GRF	0020.0	0040	70.0	9.2	4.6		
	2695	LEAR	4 S/F	0046.3	0057.1	17.2	59			
	2695	PENT	3 S	0046.5	0057.5	25.0	64.0	25.8		
	8800	LEAR	4 S/F	0047.5	0057.1	14.3	30			
	2695	PALE	4 S/F	0048.8	0058.6	17.3	60			
	8800	PALE	4 S/F	0049.3	0051.5	16.7	15			
	2800	OTTA	20 GRF	1350.0	1455	180.0	6.4	4.2		
	2800	OTTA	21 GRF	1845.0	1945	230.0	9.8	5.0		
	2800	OTTA	21 GRF	2135.0	2150	40.0	9.6	4.8		
	2800	OTTA	3 S	2140.0	2142.5	5.0	15.8	7.6		
	2695	PALE	4 S/F	2141.3	2142.6	2.2	26			
	8800	PALE	8 S	2141.6	2142.6	1.4	27			
	2800	OTTA	3 S	2146.0	2146.7	4.0	12.2	5.4		
06	8800	ATHN	4 S/F	0508.5	0509.8	9.0	56			
	8800	LEAR	8 S	0508.8	0509.8	1.7	24			
	8800	LEAR	4 S/F	0702.0	0711.6	14.5	16			
	2800	OTTA	8 S	1230.9	1231.1	.5	2.4	1.2		
	2800	OTTA	20 GRF	1900.0	1930	110.0	6.6	3.3		
	2800	OTTA	1 S	2203.0	2204	2.0	2.4	1.2		
07	2695	PENT	3 S	0117.0	0118.7	6.0	90.0	30.0		
	2695	MANI	47 GB	0418.6	0430.1	19.5D	63			
	2695	LEAR	47 GB	0423.1	0430.0	26.9	68			
	2695	ATHN	4 S/F	0423.3E	0432.6	15.0	79			
	8800	LEAR	47 GB	0424.1	0430.3	25.9	39			
	2800	OTTA	240AR	1455.0	1530	35.0	4.8	2.4		
	2800	OTTA	8 S	1456.0	1456.2	.3	4.8	2.4		
	2800	OTTA	40 F	1541.0	1541.5	4.3	9.8			
	2695	ATHN	4 S/F	1541.1	1541.5	5.7D	89			
	8800	ATHN	8 S	1541.3	1541.6	.8	85			
	3200	BERN	20 GRF	1603.3	1604.2	30.0				ONLY PAPER REC
	2800	OTTA	21 GRF	1603.7	1604.5	12.0	9.2	3.0		
	2800	OTTA	8 S	1605.5	1606	.6	2.4	1.2		
	2800	OTTA	1 S	1826.0	1826.6	1.5	8.8	4.0		
	2800	OTTA	21 GRF	1834.3	1835	12.0	5.8	2.6		
	2800	OTTA	8 S	1839.8	1839.9	.2	5.8			
	2800	OTTA	20 GRF	1950.0	1954	15.0	3.0	1.5		
	2695	PENT		2012.0	2013.7	2.0	5.4	2.4		
	2695	PENT	41 SER	2012.0	2015.5	6.0	10.6			
	2695	PALE	8 S	2015.0	2015.5	.8	13			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
07	2695	PENT		2015.3	2015.5	.8	10.6	5.3		
	2800	OTTA		2016.4	2017	1.6	6.4	2.8		
	2695	PENT	240 R	2120.0	2245	95.0	7.6	3.6		
08	2695	PENT	41 SER	0041.5	0044.5	3.5	25.4			
	2695	PENT		0041.5	0042.3	1.2	15.2	7.6		
	8800	LEAR	47 GB	0041.6	0044.6	3.4	74			
	2695	LEAR	8 S	0041.8	0042.3	.7	18			
	2695	PENT		0044.0	0044.5	1.0	25.4	12.0		
	2695	LEAR	4 S/F	0305.3	0306.8	4.7	11			
	8800	ATHN	4 S/F	0905.1	0906.8	7.2	09			
	8800	ATHN	4 S/F	1233.6	1237.3	5.2	16			
	3200	BERN	1 S	1257.3	1259.0	3.0				ONLY PAPER REC
	2695	SGMR	4 S/F	1257.5	1259.1	2.8D	24			
	2695	ATHN	4 S/F	1257.8	1259.1	4.5D	22			
	8800	ATHN	4 S/F	1258.1	1259.1	7.2	130			
	2800	OTTA	3 S	1258.3	1259.2	1.7	21.2	10.0		
	8800	SGMR	8 S	1258.5	1259.3	1.6D	130			
	2800	OTTA	21 GRF	1430.0	1525	100.0	5.0	2.6		
	2800	OTTA	1 S	1434.5	1436	2.5	2.4	1.2		
	2800	OTTA	1 S	1549.0	1550	2.5	2.8	1.2		
	2800	OTTA	21 GRF	1615.0	1830	575.0	51.0			
	8800	SGMR	8 S	1616.1	1617.1	2.0	25			
	2695	SGMR	8 S	1616.1	1616.8	2.0D	13			
	2800	OTTA	21 GRF	1623.0	1703	92.0	44.8	25.0		
	2800	OTTA	45 C	1624.0	1624.6	7.5	47.4	23.7		
	8400	BERN	45 C	1625.6	1637.2	60.0D	79.0			
	3200	BERN	45 C	1625.6	1637.3	60.0D	144.0			
	8800	ATHN	4 S/F	1631.6	1637.8	20.7D	23			
	2800	OTTA	4 S/F	1634.3	1637.3	7.4	188.0	58.6		
	2695	ATHN	4 S/F	1635.3	1637.8	17.0D	270			
	2800	OTTA	40 F	1645.7	1648.5	30.0	34.0			
	2800	OTTA	1 S	1739.5	1740.5	4.0	4.8	2.4		
	2800	OTTA	1 S	1925.5	1928	6.0	5.0	2.5		
	2800	OTTA	4 S/F	1956.0	1957.9	9.0	14.8	6.2		
	2695	PENT	2 S/F	2006.0	2007	1.2	4.0			
	2800	OTTA	22 GRF	2030.0	2032	13.0	9.8	7.0		
	2800	OTTA	46F C	2047.0	2050.6	26.0	179.0	55.0		
	2695	PALE	4 S/F	2047.1	2050.6	46.2	200			
	2695	PENT	8 S	2352.5	2352.7	.8	8.4	2.8		
09	3200	BERN	4 S/F	0651.5	0653.1	5.0	18.0			
	3200	BERN	3 S	0939.6	0940.5	6.0	25.0			
	8400	BERN	3 S	0939.6	0940.6	6.0	92.0			
	2800	OTTA	240AR	1200.0	1253	53.0	9.8	4.9		
	2800	OTTA	2 S/F	1228.6	1229.5	8.0	4.8	2.4		
	3200	BERN	3 S	1234.2	1235.4	10.0	7.0			
	2800	OTTA	27A RF	1417.0		383.0D	9.8			
	2800	OTTA	24P R	1417.0		338.0	9.8			
	2800	OTTA	24 R	1417.0	1417	17.0E	9.8			
	2800	OTTA	28 GRF	1440.0	1455	90.0	14.2	6.0		
	3200	BERN	20 GRF	1442.0	1452.8	80.0	12.0			
	2800	OTTA	21 GRF	1650.0	1840	184.0	30.0	15.0		
	3200	BERN	45 C	1707.6	1726.3	23.0D	94.0U			
	2800	OTTA	46F C	1708.8	1709.5	40.0	112.0	22.0		
	2800	OTTA	1 S	1822.5	1823.4	1.5	8.8	4.8		
	2800	OTTA	46F C	1825.5	1849.8	45.0	325.0	99.0		
	2800	OTTA	1 S	1913.8	1915	5.0	3.4	1.7		
	2800	OTTA	26 FAL	1955.8	2040	45.0	-9.8	-6.6		
	2695	PENT	21 GRF	2145.8	2300	160.0	11.2	5.6		
	2800	OTTA	40 F	2209.0	2219	14.0	5.6			
	2695	PENT	1 S	2257.0	2258	2.5	6.4	3.2		
10	2695	PENT	26 FAL	0030.0	0100	30.0	-7.4	-3.7		
	2695	PENT	8 S	0111.9	0111.9	.1	27.6			
	8400	BERN	47 GB	1050.3	1114.8	120.0	1321.0			
	3200	BERN	46 C	1050.3	1114.6	120.0	380.0			
	2800	OTTA		1120.0	1128	60.0D	192.0			
	2800	OTTA	29 PBI	1220.0	1220	215.0	26.4	11.0		
	2800	OTTA	21 GRF	1625.0	1707	365.0	40.0	17.8		
	3200	BERN	47 GB	1630.0	1647.7	50.0D	852.0			
	8400	BERN	47 GB	1632.0	1647.6	50.0D	1682.0			
	2800	OTTA	3 S	1634.5	1736	5.0	30.0	12.6		
	2800	OTTA	47 GB	1640.5	1651.5	25.0	1035.0	390.0		
	2695	ATHN	47 GB	1641.0	1647.3	14.5D	1300			
	8800	ATHN	47 GB	1643.0	1647.3	12.5D	2700			
	2800	OTTA	4 S/F	1708.0	1712.5	14.0	69.0	25.2		
	2695	PENT	4 S/F	1725.0	1730.5	10.0	24.6	8.2		
	2800	OTTA	3 S	1738.5	1740.2	7.0	38.0	13.0		
	2800	OTTA	1 S	1749.5	1751	4.0	7.6	3.8		
	2800	OTTA	21 GRF	1900.0	1925	60.0	10.0	6.6		
	2695	PALE	8 S	1907.3	1908.0	.2	23			
	2800	OTTA	2 S/F	1907.3	1909.9	6.0	8.6	4.0		
	2800	OTTA	3 S	1918.0	1920.3	6.0	20.0	6.6		
	2800	OTTA	1 S	2207.8	2208.1	3.0	9.0	3.8		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
10	2695	LEAR	8 S	2349.1	2349.5	.7	88			
	8800	LEAR	8 S	2349.1	2349.3	.5	31			
11	8800	LEAR	4 S/F	0116.5	0118.1	2.6	139			
	2695	PENT	3 S	0116.7	0118.1	4.0	21.2	8.8		
	2695	LEAR	4 S/F	0116.8	0118.1	2.3	27			
	8800	PALE	8 S	0117.5	0118.0	.8	84			
	2695	PALE	8 S	0118.0	0118.1	.6	23			
	8800	LEAR	8 S	0445.5	0445.6	.3	21			
	2695	LEAR	8 S	0445.5	0445.6	.3	19			
	8800	LEAR	4 S/F	0457.3	0507.0	16.8	10			
	2695	LEAR	4 S/F	0457.3	0458.0	4.5	86			
	2695	LEAR	4 S/F	0534.1	0536.8	12.0	88			
	3200	BERN	41 F	0824.7	0829.7	25.0	8.0			
	2695	LEAR	8 S	0828.8	0829.1	1.3	10			
	8800	LEAR	8 S	0828.8	0829.1	1.3	10			
	8400	BERN	3 S	1014.3	1017.5	25.0	32.0			
	2800	OTTA	1 S	1234.0	1236	8.0	4.0	1.8		
	8400	BERN	8 S	1302.2	1303.2	1.5	20.0			
	2800	OTTA	4 S/F	1333.0	1335	4.0	40.0	14.0		
	3200	BERN	3 S	1333.3	1334.9	24.0	31.0			
	2695	SGMR	4 S/F	1333.5	1334.8	4.5	41			
	2695	ATHN	4 S/F	1333.6	1334.8	4.2	36			
	8800	ATHN	4 S/F	1333.8	1335.1	3.0	23			
	8800	SGMR	4 S/F	1334.0	1335.3	4.0D	33			
	8400	BERN	3 S	1334.0	1334.8	15.0	36.0			
	2800	OTTA	22 GRF	1420.0	1520	150.0	4.0	2.0		
	8400	BERN	3 S	1516.0	1516.6	3.0	53.0			
	8800	SGMR	4 S/F	1516.1	1516.6	2.7D	60			
	3200	BERN	3 S	1516.3	1516.6	3.0	7.0			
	2800	OTTA	21 GRF	1730.0	1815	130.0	9.4	4.7		
	8800	SGMR	8 S	1827.5	1828.1	1.6D	47			
	8800	PALE	8 S	1827.6	1828.1	1.4	60			
	2800	OTTA	8 S	1827.0	1827.9	.7	9.0			
	2800	OTTA	1 S	2000.0	2001	2.0	3.0	1.5		
	2800	OTTA	23 GRF	2030.0	2114	120.0D	9.0			
	2800	OTTA	1 S	2139.5	2140	2.0	6.6	3.3		
	2695	LEAR	4 S/F	2337.3	2339.6	3.3	35			
	8800	LEAR	47 GB	2337.3	2339.1	9.7	85			
	8800	PALE	8 S	2338.6	2339.1	1.7	87			
	2695	PALE	8 S	2339.1	2339.6	1.0	32			
12	8400	BERN	20 GRF	0746.0	0756.1	27.0	51.0			ONLY PAPER REC
	8400	BERN	20 GRF	0900.0	0910.1	60.0	30.0			ONLY PAPER REC
	3200	BERN	20 GRF	0900.0	0910.1	60.0				ONLY PAPER REC
	8400	BERN	3 S	1030.0	1034.1	24.0	30.0			ONLY PAPER REC
	2800	OTTA	23 GRF	1155.0	1435	300.0	19.0			
	8400	BERN	20 GRF	1241.5	1249.8	84.0	47.0			ONLY PAPER REC
	3200	BERN	20 GRF	1241.5	1341.5	84.0				ONLY PAPER REC
	8800	ATHN	4 S/F	1242.0	1247.1	24.8	47			
	2800	OTTA	1 S	1324.5	1325	1.2	5.0	2.8		
	2695	SGMR	4 S/F	1324.6	1325.3	2.2D	88			
	8800	SGMR	8 S	1324.6	1325.6	1.7D	28			
	8800	ATHN	4 S/F	1338.1	1353.1	29.9	40			
	2695	SGMR	4 S/F	1339.3	1341.6	5.7	35			
	2695	ATHN	4 S/F	1339.6	1341.8	28.4D	30			
	2800	OTTA	45 C	1341.0	1341.5	1.3	33.0	11.0		
	2800	OTTA	4 S/F	1352.3	1352.5	3.0	19.6	4.9		
	2800	OTTA	1 S	1602.5	1602.9	1.0	5.0	2.5		
	3200	BERN	3 S	1606.1	1606.5	18.0				ONLY PAPER REC
	8400	BERN	3 S	1606.1	1606.5	18.0	74.0			ONLY PAPER REC
	2800	OTTA	3 S	1606.3	1606.7	4.0	132.0	30.0		
	8800	ATHN	8 S	1606.6	1606.8	1.5	99			
	2695	ATHN	8 S	1606.6	1606.8	2.0D	110			
	2800	OTTA	20 GRF	1705.0	1735	115.0	5.0	2.5		
	2800	OTTA	21 GRF	1940.0	2200	320.0	35.0	15.2		
	2800	OTTA	20 GRF	1944.0	1948	15.0	12.0	6.0		
	2695	PENT	3 S	2006.7	2007	6.0	85.0	15.6		
	2695	PALE	8 S	2006.8	2007.0	.8	75			
	8800	PALE	8 S	2006.8	2006.8	.3	130			
	2695	PALE	47 GB	2133.0	2142.3	67.1	300			
	2800	OTTA	4 S/F	2134.0	2142.4	23.0	300.0	65.0		
	8800	PALE	47 GB	2137.5	2142.1	59.1	260			
	2800	OTTA	1 S	2201.0	2201.5	1.0	5.2	2.6		
	2800	OTTA	4 S/F	2215.0	2215.7	3.0	10.4	3.4		
	2800	OTTA	46F C	2226.5	2227.5	4.5	82.0	37.2		
	2695	PENT	29 PBI	2231.0	2231	18.0	14.6	7.3		
	2695	PENT	46F C	2303.0	2304.2	2.5	10.4	3.4		
	2695	PENT	8 S	2338.7	2338.7	.2	6.0			
13	8800	LEAR	8 S	0202.5	0202.6	.1	16			
	2695	LEAR	8 S	0223.1	0223.3	1.7	11			
	8800	LEAR	8 S	0223.1	0223.3	1.5	08			
	8800	PALE	47 GB	0254.8	0258.8	11.8	23			
	2695	PALE	8 S	0419.3	0419.8	.2	18			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
13	8800	PALE	4 S/F	0421.1	0421.6	2.2	48			
	2695	LEAR	8 S	0532.8	0533.6	1.0	21			
	8800	LEAR	8 S	0533.1	0533.6	.2	15			
	8400	BERN	20 GRF	0700.0	0738.2	73.0	25.0			ONLY PAPER REC
	3200	BERN	21 GRF	0707.0	0755.0	98.0				ONLY PAPER REC
	8800	LEAR	4 S/F	0726.5	0730.8	4.1	11			
	2695	LEAR	4 S/F	0726.5	0730.8	4.1	05			
	2695	ATHN	4 S/F	0735.5	0741.8	9.1D	11			
	8800	ATHN	4 S/F	0737.5	0738.8	5.1	11			
	8400	BERN	21 GRF	1002.0	1013.3	33.0	21.0			ONLY PAPER REC
	3200	BERN	21 GRF	1002.0	1013.3	33.0				ONLY PAPER REC
	8800	ATHN	8 S	1008.6	1008.8	1.0	13			
	2695	ATHN	4 S/F	1011.5	1013.8	11.6D	19			
	8800	ATHN	4 S/F	1012.3	1014.0	6.7	17			
	2800	OTTA	1 S	1156.0	1157	2.0	3.0	1.3		
	2800	OTTA	1 S	1200.0	1200.5	2.0	2.4	1.2		
	2800	OTTA	21 GRF	1205.0	1347	345.0	24.0	12.0		
	3200	BERN	3 S	1212.6	1213.2	7.0				ONLY PAPER REC
	2695	SGMR	4 S/F	1213.0	1213.3	2.1D	27			
	2800	OTTA	45 C	1213.0	1213.3	2.0	26.8	6.7		
	8800	ATHN	4 S/F	1213.1	1213.5	4.2	17			
	2695	ATHN	4 S/F	1213.1	1213.3	3.7D	21			
	2695	SGMR	8 S	1242.6	1243.0	.9D	11			
	2800	OTTA	1 S	1242.8	1243	1.0	6.0	3.0		
	2695	ATHN	4 S/F	1246.6	1247.0	10.7D	07			
	8800	ATHN	8 S	1246.6	1247.1	1.7	09			
	2800	OTTA	1 S	1259.9	1300.2	1.0	4.0	2.0		
	2695	SGMR	8 S	1300.0	1300.3	.5	06			
	2695	SGMR	8 S	1309.1	1309.5	.5	05			
	2695	ATHN	4 S/F	1309.1	1332.0	56.2D	13			
	2800	OTTA	8 S	1309.2	1309.5	.5	3.4	1.7		
	8800	ATHN	4 S/F	1316.6	1335.8	44.9	21			
	3200	BERN	3 S	1502.7	1503.0	4.0				ONLY PAPER REC
	2695	SGMR	8 S	1502.8	1503.1	1.3D	19			
	2800	OTTA	3 S	1502.9	1503.2	2.0	14.8	3.8		
	8800	SGMR	8 S	1503.0	1503.1	.6D	11			
	2800	OTTA	8 S	1729.0	1729.3	.5	4.8			
	2800	OTTA	23 GRF	1810.0	2250	430.0	28.4	18.3		
	2695	PALE	8 S	1857.6	1858.3	.2	15			
	2800	OTTA	20 GRF	2025.0	2035	65.0	15.0	6.3		
14	2695	PENT	30 PBI	0023.0	0023	90.0	47.0			
	2695	PENT	21 GRF	0110.0	0120	30.0	7.8	4.0		
	2695	PENT	1 S	0115.0	0116	2.5	4.8	2.6		
	3200	BERN	3 S	0732.0	0733.5	2.5	6.0			ONLY PAPER REC
	8400	BERN	4 S/F	0841.1	0843.1	20.0	29.0			
	3200	BERN	4 S/F	0842.2	0843.0	25.0				ONLY PAPER REC
	3200	BERN	3 S	0920.6	0921.1	7.0				ONLY PAPER REC
	3200	BERN	21 GRF	1011.0	1015.0	45.0				ONLY PAPER REC
	8400	BERN	21 GRF	1011.0	1015.0	45.0	19.0			ONLY PAPER REC
	2695	ATHN	4 S/F	1013.6	1015.0	12.0D	08			
	8800	ATHN	4 S/F	1013.8	1015.0	11.8	18			
	3200	BERN	1 S	1155.2	1156.1	37.0				ONLY PAPER REC
	2695	SGMR	8 S	1155.6	1156.0	1.4D	06			
	8800	SGMR	8 S	1155.8	1156.1	1.0D	19			
	8400	BERN	3 S	1239.3	1241.8	18.0	33.0			
	8800	SGMR	4 S/F	1239.6	1242.1	4.4	37			
	3200	BERN	3 S	1333.5	1334.0	9.0				ONLY PAPER REC
	2800	OTTA	8 S	1333.7	1333.9	.7	21.8	10.9		
	2800	OTTA	1 S	1336.4	1337	2.0	4.4	2.2		
	8800	ATHN	4 S/F	1339.3	1334.3	4.3D	28			
	2800	OTTA	21 GRF	1520.0	1634	170.0	9.0	3.0		
	2800	OTTA	8 S	1646.0	1646.1	.3	9.8			
	3200	BERN	3 S	1648.3	1649.0	3.0				ONLY PAPER REC
	2800	OTTA	3 S	1649.0	1649.8	2.5	34.6	17.0		
	2800	OTTA	1 S	1753.7	1755	7.0	5.0	2.5		
	2800	OTTA	24OAR	1820.0	1845	25.0	5.0	2.4		
	2800	OTTA	8 S	1834.7	1834.7	.1	4.8			
	2800	OTTA	1 S	1841.0	1842	3.0	3.4	1.7		
	2800	OTTA	20 GRF	1846.0	1900	35.0	4.0	2.0		
	2800	OTTA	1 S	1953.5	1953.9	1.0	4.0	1.8		
	2695	PENT	1 S	2003.2	2003.7	2.5	2.8	1.4		
	2800	OTTA	21 GRF	2017.0	2040	60.0	4.6	2.0		
	2800	OTTA	1 S	2042.3	2042.6	1.5	2.0	1.0		
	2800	OTTA	3 S	2050.1	2050.4	6.0	43.0	10.0		
	2695	PALE	4 S/F	2050.3	2050.5	3.7	42			
	8800	PALE	4 S/F	2050.3	2050.3	3.0	98			
	2800	OTTA	21 GRF	2216.0	2220	18.0	4.8	2.4		
	2695	PALE	8 S	2217.8	2218.6	1.2	17			
	2800	OTTA	1 S	2218.0	2218.7	1.5	2.8	1.4		
	8800	PALE	8 S	2218.3	2218.6	1.3	26			
	2695	PENT	28 PRE	2314.0	2326	14.0	9.4			
	2695	PENT	47 GB	2328.0	2353.5	55.0	1470.0	531.0		
	2695	PALE	47 GB	2328.1	2343.0	192.4D	1399			
	8800	PALE	47 GB	2329.5	2346.5	57.7D	2600			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
14	2695	LEAR	47 GB	2329.5	2343.0	53.1D	2800			
	8800	LEAR	47 GB	2329.5	2346.6	17.1D	2000			
15	2695	LEAR	8 S	0053.0	0053.1	.1	18			
	8800	ATHN	4 S/F	0522.5	0527.1	9.1	35			
	8800	ATHN	4 S/F	0525.5	0527.1	6.1	35			
	8800	ATHN	47 GB	0527.1	0531.6	4.5D	35			
	2695	ATHN	4 S/F	0529.3	0529.6	20.5D	08			
	3200	BERN	3 S	0558.2	0600.3	4.0	56.0			
	8400	BERN	3 S	0558.6	0600.4	4.0	47.0			
	2695	ATHN	4 S/F	0559.3	0600.3	5.3D	119			
	2695	LEAR	8 S	0600.1	0600.3	.5	65			
	8800	ATHN	8 S	0600.1	0600.3	.9	16			
	8800	LEAR	8 S	0600.1	0600.3	.4	21			
	2695	MANI	8 S	0601.0	0601.5	1.0D	58			
	8400	BERN	47 GB	0637.7	0643.6	42.0	613.0			
	3200	BERN	41 F	0637.7	0643.7	45.0	138.0			
	2695	ATHN	4 S/F	0638.3	0643.0	31.5D	110			
	8800	ATHN	47 GB	0638.5	0643.0	26.0	650			
	2695	MANI	47 GB	0657.0	0659.1	8.6D	58			
	2695	LEAR	8 S	0657.5	0657.8	.8	62			
	8800	LEAR	4 S/F	0657.6	0657.8	595.2	46			
	8800	MANI	8 S	0658.3	0659.0	1.0	57			
	2695	LEAR	4 S/F	0701.0	0701.8	3.3	35			
	3200	BERN	41 F	0851.7	0853.0	7.0	22.0			
	2695	LEAR	8 S	0857.1	0857.3	.2	16			
	3200	BERN	4 S/F	1021.4	1022.4	2.5	29.0			
	3200	BERN	41 F	1201.4	1204.3	18.0	45.0			
	8400	BERN	41 F	1201.8	1204.3	17.0	21.0			
	2800	OTTA	4 S/F	1203.0	1203.5	3.0	44.0	15.0		
	2800	OTTA	8 S	1204.0	1204.2	.6	2.4	1.2		
	2800	OTTA	21 GRF	1212.0	1250	70.0	4.8	3.2		
	2800	OTTA	3 S	1212.2	1213.8	3.5	44.0	15.0		
	2800	OTTA	3 S	1234.7	1235.3	1.4	10.8	4.0		
	2800	OTTA	1 S	1259.0	1259.3	1.0	3.2	1.8		
	2800	OTTA	21 GRF	1450.0	1614	170.0	10.0	4.0		
	8400	BERN	41 F	1515.0	1520.5	28.0	94.0			
	3200	BERN	41 F	1515.7	1520.6	28.0	100.0			
	2800	OTTA	3 S	1518.5	1520.5	3.0	122.0	22.0		
	2695	ATHN	4 S/F	1520.3	1520.6	30.2D	84			
	8800	ATHN	4 S/F	1520.5	1520.6	25.8	42			
	2800	OTTA	30 PBI	1521.5	1521.5	16.0	17.6	5.9		
	2800	OTTA	8 S	1523.5	1523.7	.5	7.4	3.4		
	2800	OTTA	4 S/F	1526.0	1527.8	4.0	27.0	7.0		
	3200	BERN	3 S	1703.5	1707.6	5.0				ONLY PAPER REC
	2695	PALE	8 S	1707.6	1707.8	.4	45			
	2800	OTTA		1708.0		4.0D	5.8			
	2800	OTTA	45 C	1821.0	1821.4	4.5	12.8			
	2800	OTTA	21 GRF	1910.0	2144	355.0	14.8	7.4		
	2800	OTTA	3 S	1919.0	1919.5	2.0	14.8	4.0		
	2695	PALE	8 S	1919.3	1919.3	.2	18			
	2800	OTTA	1 S	1926.8	1927.5	1.5	4.4	2.0		
	2800	OTTA	1 S	1943.0	1944	5.0	3.8	1.8		
	8800	PALE	47 GB	1950.3	1956.5	7.0	670			
	8800	PALE	47 GB	2004.5	2015.5	18.6	2100			
	2800	OTTA	1 S	2130.0	2131	2.0	3.4	1.6		
	2695	PENT	1 S	2240.3	2240.5	2.0	9.4	4.0		
	2695	PENT	1 S	2251.0	2252	7.0	6.0	3.0		
	2695	LEAR	47 GB	2329.5	2343.0	53.1D	2800			
	8800	LEAR	47 GB	2329.5	2346.6	55.0D	2000			
16	8800	LEAR	4 S/F	0032.3	0032.3	175.4	15			
	2695	PENT	21 GRF	0110.0	0120	30.0	7.0	3.5		
	2695	MANI	4 S/F	0113.0	0115.1	3.6D	69			
	2695	PENT	3 S	0113.0	0114.7	5.0	42.0	12.0		
	8800	PALE	47 GB	0113.8	0114.5	1.0	51			
	8800	MANI	4 S/F	0114.0	0115.1	2.8	71			
	2695	PALE	47 GB	0114.0	0114.6	3.6	45			
	2695	LEAR	8 S	0114.6	0114.6	.7	40			
	8800	LEAR	8 S	0114.6	0114.6	.7	56			
	2695	LEAR	8 S	0255.6	0256.1	.9	49			
	8800	LEAR	8 S	0255.8	0256.0	.3	19			
	2695	LEAR	8 S	0317.3	0317.3	.3	05			
	8800	LEAR	8 S	0317.3	0317.3	.3	18			
	8800	ATHN	4 S/F	0501.6	0503.0	3.0	19			
	2695	ATHN	4 S/F	0502.8	0502.6	2.8D	04			
	8800	ATHN	4 S/F	0842.6	0846.3	83.9	25			
	3200	BERN	3 S	0843.0	0846.2	75.0				ONLY PAPER REC
	8800	LEAR	47 GB	0845.3	0846.3	475.2	22			
	2695	LEAR	4 S/F	0845.5	0847.0	4.0	23			
	2800	OTTA	20 GRF	1310.0	1415	160.0	8.0	4.0		
	2800	OTTA	20 GRF	1600.0	1654	75.0	4.0	2.0		
	2800	OTTA	23 GRF	1800.0	2010	270.0	12.6	6.3		
	2800	OTTA	1 S	2051.0	2052.5	3.0	3.4	1.7		
	2800	OTTA	8 S	2154.4	2154.5	.7	4.0			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
16	2695	MANI	47 GB	2239.0	2240.8	7.6D	900			
	2695	PENT	21 GRF	2239.0	2320	100.0D	14.6			
	2695	PENT	47 GB	2239.2	2240.7	6.0	1020.0	102.0		
	8800	MANI	47 GB	2239.3	2241.0	4.8	500			
17	2695	MANI	4 S/F	0324.8	0325.8	3.2D	52			
	8800	MANI	4 S/F	0325.0	0325.6	2.8	75			
	8800	LEAR	8 S	0325.1	0325.6	1.5	81			
	2695	LEAR	8 S	0325.1	0325.6	1.2	53			
	8800	LEAR	47 GB	0340.1	0346.5	8.2	63			
	8800	LEAR	4 S/F	0351.8	0353.0	2.2	25			
	8800	ATHN	4 S/F	0858.3	0900.0	4.8	06			
	8800	ATHN	4 S/F	0930.6	0932.6	6.2	15			
	2800	OTTA	21 GRF	1210.0	1240	275.0	40.0	16.0		
	2800	OTTA	2 S/F	1216.9	1218	4.5	9.8	3.3		
	2695	SGMR	4 S/F	1235.0	1249.8	25.0	26			
	8800	ATHN	4 S/F	1235.5	1304.8	98.1	32			
	2695	ATHN	4 S/F	1243.3	1258.6	85.2D	24			
	8400	BERN	21 GRF	1309.0	1424.3	190.0	129.0			
	3200	BERN	21 GRF	1309.0	1424.3	190.0	145.0			
	2695	SGMR	8 S	1328.6	1328.8	.2	93			
	2695	ATHN	4 S/F	1421.1	1422.3	7.5D	130			
	8800	ATHN	4 S/F	1421.3	1422.3	4.5	110			
	2800	OTTA	3 S	1423.0	1424.3	7.0	160.0	32.0		
	2695	SGMR	4 S/F	1423.1	1424.3	6.2D	160			
	8800	SGMR	4 S/F	1423.5	1424.5	3.6D	150			
	2800	OTTA	27A RF	1715.0		145.0	5.0	4.2		
	2800	OTTA	24 R	1715.0	1720	5.0	5.0	2.5		
	2800	OTTA	24P R	1720.0		100.0	5.0			
	2800	OTTA	1 S	1829.0	1830.8	3.0	2.4	1.2		
	2800	OTTA	26 FAL	1900.0	1940	40.0	-5.0	-2.5		
	2695	SGMR	4 S/F	2024.5	2032.6	15.3D	28			
	2800	OTTA	20 GRF	2050.0	2130	100.0	8.2	4.1		
	2695	PENT	3 S	2248.0	2249	2.5	30.0			
	2695	PENT	20 GRF	2300.0	2303	30.0	10.2	5.0		
18	8800	LEAR	47 GB	0131.3	0133.5	9.8	160			
	8800	MANI	47 GB	0132.0	0132.8	8.5	110			
	2695	MANI	47 GB	0132.0	0135.3	12.1D	98			
	2695	LEAR	47 GB	0132.1	0135.1	11.7	75			
	2695	PENT	40 F	0141.8	0142.3	2.0	67.0			
	8800	LEAR	4 S/F	0303.8	0304.3	2.2	36			
	2695	ATHN	4 S/F	0544.6	0548.0	14.0D	04			
	8800	LEAR	8 S	0547.6	0547.8	.4	25			
	8800	ATHN	4 S/F	0547.6	0548.0	5.5	17			
	2695	LEAR	8 S	0549.6	0549.8	.5	15			
	8800	LEAR	8 S	0602.3	0602.8	.2	17			
	8800	LEAR	8 S	0604.8	0605.0	.2	19			
	8800	LEAR	4 S/F	0607.0	0626.0	58.0	45			
	2695	LEAR	4 S/F	0615.1	0615.3	49.9	13			
	3200	BERN	3 S	0809.0	0811.2	4.0				ONLY PAPER REC
	8800	ATHN	8 S	0810.5	0811.1	1.8	17			
	8800	LEAR	8 S	0810.6	0811.0	.4	26			
	8400	BERN	45 C	1047.8	1051.5	87.0	455.0			
	3200	BERN	45 C	1048.2	1051.5	93.0	53.0			
	8800	SGMR	4 S/F	1049.1	1051.6	5.5D	380			
	2695	SGMR	4 S/F	1049.3	1051.6	4.0D	52			
	8800	ATHN	4 S/F	1235.5	1304.8	98.1	32			
	2695	ATHN	4 S/F	1243.3	1258.6	85.2D	24			
	2800	OTTA	1 S	1305.0	1307.2	7.0	8.8	3.8		
	2695	SGMR	8 S	1306.0	1307.1	2.0	09			
	2800	OTTA	26O FAL	1315.0	1355	40.0	-10.0	-5.0		
	2800	OTTA	20 GRF	1425.0	1440	35.0	5.0	2.5		
	2800	OTTA	21 GRF	1720.0	1815	90.0	4.0	2.0		
	2800	OTTA	1 S	1721.0	1722	2.0	5.6			
	2800	OTTA	20 GRF	2015.0	2030	50.0	2.6	1.3		
	2800	OTTA	21 GRF	2055.0	2145	90.0	6.8	3.4		
	2800	OTTA	4 S/F	2112.5	2116	8.5	15.6	5.2		
19	3200	BERN	4 S/F	0646.6	0650.0	45.0				ONLY PAPER REC
	8400	BERN	4 S/F	0646.6	0650.0	45.0	78.0			ONLY PAPER REC
	2695	ATHN	4 S/F	0647.5	0649.8	5.8D	87			
	8800	ATHN	4 S/F	0647.5	0649.8	8.3	92			
	8800	LEAR	4 S/F	0648.8	0649.8	4.3	119			
	2695	LEAR	8 S	0649.3	0650.1	1.8	70			
	8800	ATHN	4 S/F	0706.6	0708.8	5.0	34			
	8800	LEAR	8 S	0805.6	0805.6	.2	25			
	8800	ATHN	4 S/F	0806.3	0806.5	4.2	29			
	8800	ATHN	4 S/F	0824.5	0826.0	17.5D	43			
	8400	BERN	3 S	0825.1	0827.0	25.0	37.0			ONLY PAPER REC
	3200	BERN	3 S	0825.1	0827.0	25.0				ONLY PAPER REC
	2695	ATHN	4 S/F	0825.3	0826.0	16.7D	41			
	8800	MANI	4 S/F	0825.6	0827.3	2.5D	73			
	2695	MANI	4 S/F	0826.3	0827.1	3.3D	23			
	8800	LEAR	4 S/F	0826.5	0826.8	.6D	35			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
19	2695	LEAR	8 S	0026.5	0026.8	.8	23			
	8800	ATHN	47 GB	1048.6	1051.5	22.2	570			
	3200	BERN	3 S	1241.8	1242.3	1.5				ONLY PAPER REC
	2800	OTTA	1 S	1242.0	1242.3	1.0	4.4	2.2		
	2800	OTTA	21 GRF	1247.0	1315	110.0	6.4	3.2		
	8400	BERN	21 GRF	1247.0	1251.1	85.0	23.0			
	3200	BERN	21 GRF	1247.0	1251.2	85.0	21.0			
	2695	ATHN	4 S/F	1249.3	1251.3	3.7D	23			
	8800	ATHN	4 S/F	1249.5	1251.3	7.6	24			
	2800	OTTA	3 S	1250.0	1251.2	5.0	17.6	6.0		
	3200	BERN	21 GRF	1503.0	1538.3	100.0	28.0			
	8400	BERN	21 GRF	1513.0	1538.2	90.0	97.0			
	2800	OTTA	20 GRF	1515.0	1510	12.0	6.4	2.2		
	2800	OTTA	21 GRF	1535.0	1610	80.0	5.0	2.5		
	8800	ATHN	4 S/F	1535.0	1538.3	13.5	70			
	8800	SGMR	47 GB	1537.0	1538.1	10.0D	100			
	2695	SGMR	8 S	1537.0	1538.1	1.0D	28			
	2800	OTTA	3 S	1538.0	1538.4	2.0	23.0	6.0		
	2695	ATHN	8 S	1538.1	1538.5	2.0D	28			
	8400	BERN	3 S	1706.0	1712.0	18.0	29.0			ONLY PAPER REC
	2800	OTTA	21 GRF	1710.0	1715	60.0	4.0	2.0		
	2800	OTTA	1 S	1710.5	1712.2	3.0	4.8	2.4		
	8800	SGMR	4 S/F	1711.0	1712.1	3.0D	42			
	2695	SGMR	4 S/F	1711.0	1712.1	2.3D	86			
	2800	OTTA	260 FAL	1850.0	1920	30.0	-4.0	-2.0		
	2800	OTTA	20 GRF	1940.0	2025	110.0	5.0	2.5		
20	2695	MANI	8 S	0229.6	0230.3	1.4	27			
	2695	ATHN	4 S/F	1056.3	1059.8	9.7D	19			
	2695	SGMR	4 S/F	1057.1	1059.6	4.9D	19			
	8800	SGMR	4 S/F	1057.1	1058.8	3.9D	81			
	3200	BERN	3 S	1057.3	1059.7	50.0				ONLY PAPER REC
	8800	ATHN	4 S/F	1057.3	1058.6	4.5	54			
	2800	OTTA	1 S	1139.0	1141	8.0	2.4	1.2		
	2800	OTTA	1 S	1443.0	1444.3	4.0	3.4	1.6		
	2695	SGMR	4 S/F	1610.0	1613.1	25.0D	240			
	8800	SGMR	47 GB	1610.1	1611.1	23.2D	1100			
	2800	OTTA	46F C	1610.5	1613.9	23.5	245.0	75.0		
	3200	BERN	45 C	1610.5	1613.9	69.0	193.0			
	8400	BERN	47 GB	1610.6	1612.8	57.0	838.0			
	2695	ATHN	4 S/F	1610.6	1613.6	26.5D	180			
	8800	ATHN	47 GB	1611.8	1612.6	22.5	670			
	2800	OTTA	30 PBI	1634.0	1634	100.0	10.2	5.1		
	2800	OTTA	1 S	1727.0	1728	3.0	2.4	1.2		
21	2800	OTTA	1 S	1227.0	1228.5	3.0	2.2	1.1		
	2800	OTTA	1 S	1337.0	1337.5	2.0	4.2	2.1		
	2800	OTTA	1 S	1358.0	1359	2.0	3.8	2.2		
	2800	OTTA	21 GRF	1435.0	1457	100.0	9.8	3.0		
	2800	OTTA	8 S	1516.0	1516.2	.5	6.4	3.2		
	2800	OTTA	20 GRF	1840.0	1910	75.0	3.2	1.6		
22	8800	PALE	47 GB	0057.5	0057.6	.3	21			
	8800	PALE	8 S	0231.1	0231.5	1.5	32			
	2695	PALE	8 S	0246.3	0247.1	1.8	15			
	8800	PALE	8 S	0246.5	0246.6	1.6	36			
	2695	PALE	8 S	0257.3	0257.3	.2	20			
	2695	PALE	8 S	0317.8	0318.1	.7	20			
	8800	PALE	8 S	0317.8	0318.1	.7	25			
	2695	LEAR	8 S	0318.0	0318.1	.3	16			
	8800	LEAR	8 S	0318.0	0318.1	.3	17			
	8800	LEAR	4 S/F	0712.6	0714.1	2.5	23			
	3200	BERN	1 S	0713.7	0714.1	4.0				ONLY PAPER REC
	2695	SGMR	4 S/F	1333.5	1335.1	2.5D	08			
	2800	OTTA	8 S	1333.7	1333.7	.3	4.6			
	8800	SGMR	8 S	1334.1	1335.8	2.0D	20			
	2800	OTTA	8 S	1335.4	1335.5	.4	6.4			
	2800	OTTA	8 S	1740.7	1740.7	.1	24.0			
	2800	OTTA	23 GRF	1805.0	2005	285.0	10.8	5.0		
	2800	OTTA	2 S/F	2002.0	2003	3.5	8.2			
	2800	OTTA	1 S	2114.5	2115.7	3.0	3.6	1.8		
	8800	PALE	4 S/F	2239.8	2240.8	5.5	22			
	8800	PALE	4 S/F	2257.6	2259.3	10.9	119			
	8800	MANI	4 S/F	2259.0	2300.5	2.1	00			
23	2695	PENT	21 GRF	0000.0	0027	100.0D	14.8			
	2695	PENT	2 S/F	0004.0	0008	5.5	8.6	4.3		
	2695	PENT	3 S	0031.0	0033.5	17.0	30.2	11.4		
	8400	BERN	20 GRF	1300.3	1305.3	30.0	31.0			
	3200	BERN	21 GRF	1414.0	1415.5	45.0				ONLY PAPER REC
	2800	OTTA	21 GRF	1414.0	1430	40.0	4.4	2.2		
	8400	BERN	21 GRF	1414.0	1415.6	7.0	28.0			
	2800	OTTA	3 S	1414.5	1415.7	3.0	14.2	7.0		
	2800	OTTA	1 S	1458.0	1500	5.0	2.2	1.1		
	2800	OTTA	240AR	1550.0	1700	70.0	8.4	4.2		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
23	2800	OTTA	1 S	1624.8	1625.3	6.0	4.6	2.2		
	3200	BERN	20 GRF	1651.2	1652.0	17.0				ONLY PAPER REC
	8400	BERN	20 GRF	1651.2	1652.0	13.0	79.0			
	2800	OTTA	3 S	1652.0	1652.2	3.0	16.0	4.0		
	2800	OTTA	21 GRF	1940.0	2025	85.0	6.4	3.0		
	2800	OTTA	1 S	2017.5	2018.5	2.0	9.6	4.8		
	2800	OTTA	45 C	2023.0	2025.2	3.5	13.6	6.8		
	2800	OTTA	21 GRF	2110.0	2155	95.0	9.2	4.6		
	2800	OTTA	1 S	2204.5	2205	4.0	4.6	2.3		
24	2695	PENT	4 S/F	0042.2	0046	8.0	41.0	10.6		
	8800	LEAR	8 S	0100.5	0101.1	1.6	46			
	2695	PENT		0138.0	0143	12.0D	71.4			
	8800	LEAR	4 S/F	0139.3	0142.0	59.0	300			
	2695	LEAR	47 GB	0139.8	0142.8	55.7	74			
	8800	PALE	8 S	0340.3	0340.5	.3	26			
	8800	LEAR	4 S/F	0548.1	0554.6	8.7	17			
	3200	BERN	45 C	0642.0	0855.3	370.0				ONLY PAPER REC
	8800	ATHN	8 S	0722.3	0722.6	.8	13			
	8800	LEAR	8 S	0722.5	0722.6	.3	22			
	2695	LEAR	8 S	0736.6	0736.8	.2	13			
	8800	LEAR	47 GB	0843.3	0854.3	31.7	170			
	2695	ATHN	4 S/F	0843.3	0855.3	55.5D	240			
	8800	ATHN	4 S/F	0843.6	0854.5	49.5	119			
	2695	LEAR	47 GB	0844.0	0855.3	34.0	230			
	2695	MANI	47 GB	0844.6	0857.3	26.0D	130			
	8800	MANI	47 GB	0847.0	0855.0	22.8	150			
	2800	OTTA	8 S	1136.0	1136.1	.2	10.8			
	2800	OTTA	260 FAL	1205.0	1325	80.0	-17.0	-8.5		
	8800	ATHN	47 GB	1343.6	1402.3	131.5	7200			
	8400	BERN	47 GB	1345.0	1402.6	126.0	2200.0D			
	3200	BERN	47 GB	1345.0	1403.0	170.0	1500.0			
	2800	OTTA	28 PRE	1347.0	1348.2	2.9	15.8			
	2695	ATHN	47 GB	1347.1	1403.3	99.2D	1000			
	2695	SGMR	49 GB	1347.5	1354.5U	7.0D	750			
	8800	SGMR	49 GB	1347.5	1354.5U	7.0D	4500			
	2800	OTTA	47 GB	1349.9	1403	90.1	1360.0	475.0		
	2695	ATHN	47 GB	1430.5	1435.1	41.5D	760			
	8800	SGMR	4 S/F	1431.5	1435.0	45.5D	400			
	2695	SGMR	4 S/F	1431.5	1435.1	46.0D	400			
	2800	OTTA	30 PBI	1520.0	1520	180.0	45.0	15.0		
	2800	OTTA	2 S/F	1605.0	1608.3	5.0	4.8	2.2		
	2800	OTTA	20 GRF	1630.0	1650	65.0	14.4	7.2		
	2800	OTTA	21 GRF	1840.0	2000	190.0	5.4			
	2800	OTTA	3 S	2018.0	2021.8	15.0	82.0	25.0		
	2695	SGMR	4 S/F	2018.1	2021.6	7.0D	68			
	2695	PALE	4 S/F	2018.8	2021.6	8.5	78			
	2800	OTTA	29 PBI	2033.0	2033	17.0	6.4	3.2		
	2695	PENT	22 GRF	2153.0	2340	220.0D	17.8			
	8800	LEAR	8 S	2308.8	2309.8	1.3	20			
	2695	LEAR	8 S	2308.8	2309.6	1.3	80			
	8800	PALE	47 GB	2331.1	2333.8	13.7	52			
	8800	LEAR	47 GB	2332.6	2334.3	5.2	33			
25	8800	LEAR	4 S/F	0056.3	0057.0	4.0	26			
	8800	PALE	8 S	0056.5	0056.8	.6	30			
	8800	PALE	8 S	0059.1	0059.8	1.2	30			
	2695	PALE	8 S	0155.0	0155.3	.5	20			
	8800	PALE	8 S	0155.1	0155.1	.2	21			
	8800	LEAR	4 S/F	0442.6	0519.6	47.4	40			
	2695	LEAR	4 S/F	0443.6	0518.6	46.4	28			
	8800	LEAR	4 S/F	0530.0	0531.0	6.0	22			
	2695	LEAR	4 S/F	0530.0	0531.5	2.1	08			
	8400	BERN	3 S	0735.5	0736.0	5.0	21.0			
	8800	LEAR	8 S	0735.8	0736.1	.5	30			
	8800	ATHN	8 S	0736.1	0736.5	1.2	24			
	8400	BERN	3 S	1145.2	1146.3	4.0	14.0			
	2800	OTTA	46F C	1543.0	1545.3	22.0	66.6	30.0		
	3200	BERN	21 GRF	1543.0	1545.3	45.0	62.0			
	8400	BERN	21 GRF	1543.0	1544.9	45.0	161.0			
	2800	OTTA	30 PBI	1605.0	1605	335.0	12.8	6.4		
	8800	PALE	8 S	1740.3	1740.6	.7	110			
	2800	OTTA	20 GRF	1923.0	1932	14.0	2.6	1.3		
	2800	OTTA	46F C	1943.0	1948	15.0	55.0	16.3		
	8800	PALE	8 S	2142.8	2143.1	1.5	19			
	2695	PENT	1 S	2238.3	2239	1.2	2.2	1.1		
	2695	PENT	1 S	2259.8	2300.5	1.3	2.2	1.1		
	8800	PALE	47 GB	2307.6	2311.5	10.0	32			
	8800	LEAR	47 GB	2309.1	2311.3	2.5	33			
	8800	LEAR	47 GB	2342.8	2345.8	13.5	63			
	2695	LEAR	8 S	2345.3	2345.8	1.0	34			
	2695	PENT	3 S	2345.3	2346	3.0	25.4	6.4		
26	2695	PENT	46F C	0002.0	0003.8	6.0	8.4	2.8		
	8800	LEAR	4 S/F	0005.6	0008.0	8.4	21			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
26	8800	PALE	4 S/F	0006.0	0007.6	2.6	20			
	2695	PENT	46P C	0015.0	0016.8	9.0	20.2	12.2		
	8800	PALE	47 GB	0015.8	0016.3	2.8	27			
	2695	PALE	47 GB	0016.0	0016.8	3.0	27			
	2695	PENT	30 PBI	0024.0	0024	45.0	8.4	2.8		
	2695	PENT	1 S	0053.3	0056	5.0	3.8	1.9		
	8800	LEAR	8 S	0137.1	0137.5	.5	19			
	2695	LEAR	8 S	0250.0	0251.0	2.0	10			
	8800	LEAR	4 S/F	0250.0	0251.0	3.3	11			
	8800	LEAR	8 S	0259.3	0300.6	1.0	13			
	8800	LEAR	4 S/F	0308.0	0313.3	7.8	70			
	8800	PALE	47 GB	0310.5	0313.1	4.6	69			
	2695	LEAR	4 S/F	0311.6	0313.0	5.5	71			
	2695	PALE	4 S/F	0312.0	0312.8	5.3	68			
	8800	PALE	8 S	0340.1	0342.1	2.0	30			
	2695	PALE	8 S	0340.6	0342.1	.2	18			
	8800	LEAR	47 GB	0548.0	0616.0	42.1	85			
	8400	BERN	23 GRF	0600.7	0615.9	66.0	64.0			
	8800	ATHN	4 S/F	0607.6	0616.3	21.2	46			
	3200	BERN	23 GRF	0613.4	0632.6	50.0	35.0			
	8800	LEAR	8 S	0632.3	0632.8	.8	34			
	8800	LEAR	4 S/F	0632.3	0632.8	544.4	34			
	8800	ATHN	4 S/F	0632.6	0633.0	20.9	15			
	2695	LEAR	8 S	0632.8	0632.8	.2	16			
	8400	BERN	46 C	0716.1	0717.3	9.0	369.0			
	8800	ATHN	4 S/F	0716.1	0717.3	10.4	330			
	3200	BERN	46 C	0716.1	0717.6	37.0	457.0			
	2695	LEAR	47 GB	0716.6	0717.6	16.2	510			
	8800	LEAR	4 S/F	0716.6	0717.3	3.5	320			
	8800	ATHN	47 GB	1046.0	1153.6	182.5	10000			
	3200	BERN	47 GB	1053.0	1153.4	250.0	7540.0			
	2800	OTTA	47 GB	1100.0	1154	105.0D	9880.0	2020.0		
	2695	SGMR	47 GB	1102.5	1153.5U	51.0D	5000			
	2800	OTTA	30 PBI	1245.0	1245	210.0	92.0	29.2		
	2800	OTTA	1 S	1432.0	1432.5	1.0	3.0	1.4		
	8400	BERN	4 S/F	1735.4	1739.5	9.0U	200.0			
	8800	PALE	4 S/F	1736.6	1739.3	7.0	400			
	3200	BERN	4 S/F	1737.2	1739.5	8.0	21.0			
	2800	OTTA	21 GRF	1738.0	1758	65.0	13.2	4.4		
	2695	SGMR	4 S/F	1738.5	1739.1	4.6D	88			
	2800	OTTA	1 S	1739.0	1739.6	4.0	6.6	2.2		
	2800	OTTA	4 S/F	1749.0	1751.7	6.0	39.6	13.2		
	2695	SGMR	4 S/F	1749.1	1751.3	6.2D	139			
	2695	PALE	4 S/F	1750.5	1751.3	2.8	200			
	8800	PALE	4 S/F	1750.5	1751.6	5.5	200			
	2800	OTTA	2 S/F	1758.0	1758.2	2.0	8.8	4.4		
	2800	OTTA	21 GRF	1910.0	1929	50.0	9.6	4.8		
	2800	OTTA	4 S/F	1910.0	1913.6	5.0	30.8	13.2		
	2695	PALE	47 GB	1910.3	1913.8	4.2	50			
	2800	OTTA	1 S	1917.5	1918.3	2.5	6.6	3.3		
	2800	OTTA	1 S	1923.9	1924	2.0	3.6	1.8		
	2695	PALE	8 S	1942.6	1942.8	.4	16			
	8800	PALE	8 S	1942.6	1942.8	.4	25			
	2695	PENT	1 S	2007.0	2008	2.0	8.2	6.0		
	2695	PALE	8 S	2007.3	2007.8	1.5	13			
	2800	OTTA	29 PBI	2009.0	2009	30.0	6.6	3.6		
27	2695	PENT	20 GRF	0010.0	0032	60.0	7.4	3.4		
	8800	LEAR	4 S/F	0512.1	0514.1	2.7	25			
	8800	ATHN	47 GB	0738.0	0813.3	291.2	11000			
	2695	ATHN	47 GB	0745.5	0809.0	180.5D	3500			
	3200	BERN	47 GB	0752.0	0808.9	200.0U	2800.0			
	2800	OTTA	21 GRF	1130.0	1350	480.0	16.6			
	2800	OTTA	1 S	1858.0	1859	6.0	8.4	2.8		
	2800	OTTA	1 S	1952.0	1956	9.0	2.6	1.4		
	8800	PALE	47 GB	2251.8	2252.3	35.0	6100			
	2695	PENT	47 GB	2252.0	2255.2	24.0	1915.0	564.0		
	8800	MANI	47 GB	2252.0	2252.5	129.3D	6200			
	2695	PALE	47 GB	2252.1	2255.1	34.7	1800			
	2695	LEAR	47 GB	2258.0E	2258.0	32.1	1800			
	8800	LEAR	47 GB	2258.0E	2258.0	5.3	3000			
	2695	PENT	29 PBI	2323.0	2323	140.0	30.0	18.0		
28	2800	OTTA	21 GRF	1640.0	1648	26.0	15.8	9.0		
	2800	OTTA	45 C	1649.5	1651.7	8.0	13.2	6.0		
	2800	OTTA	22 GRF	1745.0	1834	125.0	100.0	39.0		
	2695	SGMR	4 S/F	1758.5	1833.6	61.5D	110			
	8800	PALE	4 S/F	1759.6	1842.1	63.0	39			
	2695	PALE	4 S/F	1759.6	1836.5	73.0	100			
	8800	SGMR	4 S/F	1803.0	1837.3	57.0D	26			
	2800	OTTA	47 GB	2103.0	2118.5	47.0	715.0	270.0		
	2695	PALE	47 GB	2104.3	2118.3	39.0	640			
	8800	PALE	47 GB	2106.8	2118.5	37.2	390			
	2800	OTTA	30 PBI	2150.0	2150	240.0D	20.0			
	2800	OTTA	20 GRF	2151.0	2155	13.0	10.8	6.6		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

APRIL 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
28	2800	OTTA	3 S	2207.0	2223	70.0	148.0	51.0		
	2695	PALE	47 GB	2212.1	2223.5	35.9	110			26
	8800	PALE	47 GB	2214.3	2221.8	15.8	32			26
	2695	PENT	40 F	2356.0	2410.2	24.0	48.0			
	2695	PENT	40 F	2452.0	0121	57.0	36.0			
29	2695	LEAR	4 S/F	0003.1	0010.3	7.7	37			26
	2695	LEAR	8 S	0107.6	0107.6	.2	17			26
	2800	OTTA	40 F	1326.9	1328.3	7.0	17.0			
	2800	OTTA	20 GRF	1920.0	1935	35.0	1.8	.9		
30	8800	LEAR	4 S/F	0302.8	0322.0	28.2	13			26
	2695	LEAR	4 S/F	0303.8	0304.6	11.8	16			26
	2800	OTTA	1 S	1218.0	1220.5	4.0	2.8	1.4		
	2695	PENT	240 R	2040.0	2240	120.0	3.8	1.9		

Observatories:

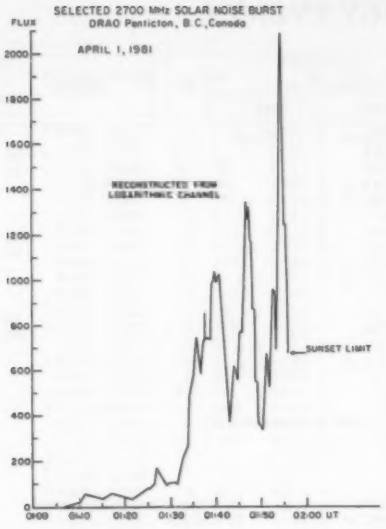
BERN = Berne MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill
LEAR = Learmonth ATHN = Athens PALE = Palehua

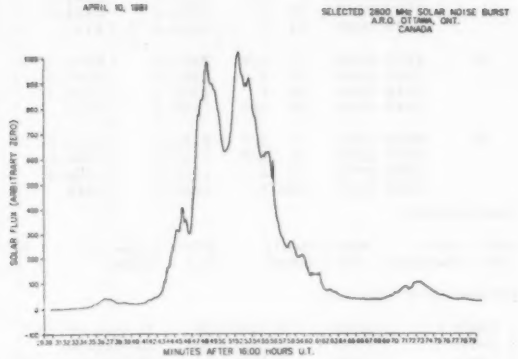
Explanation of Type Code:

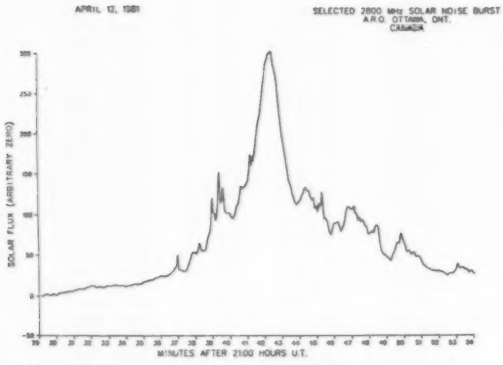
1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

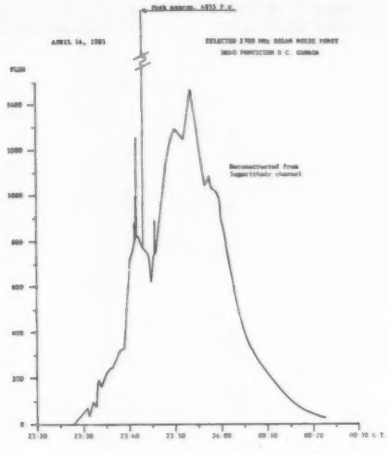
SELECTED SOLAR NOISE BURSTS

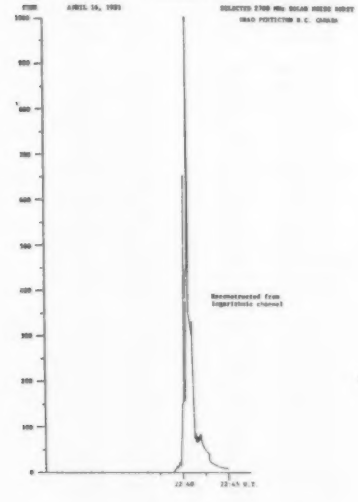
APRIL 1-20, 1981

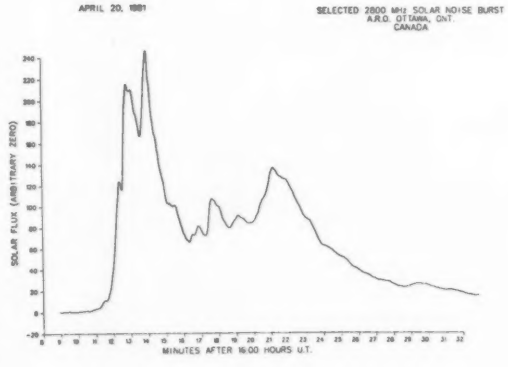






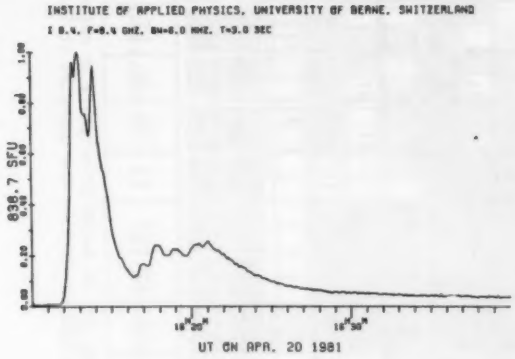


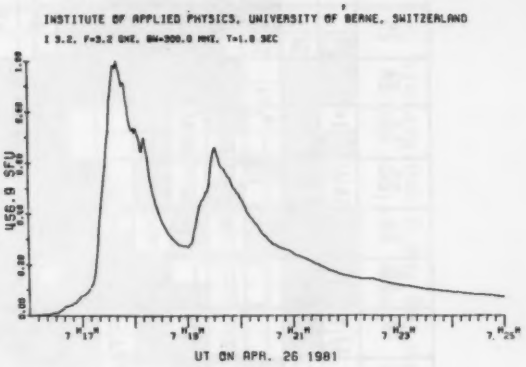


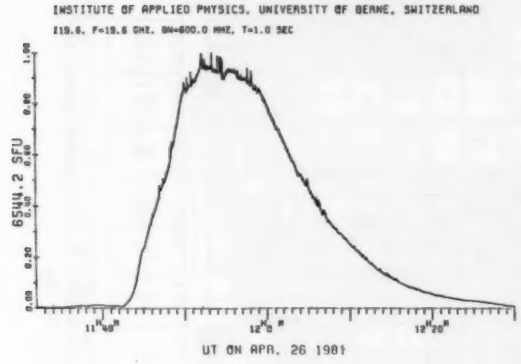


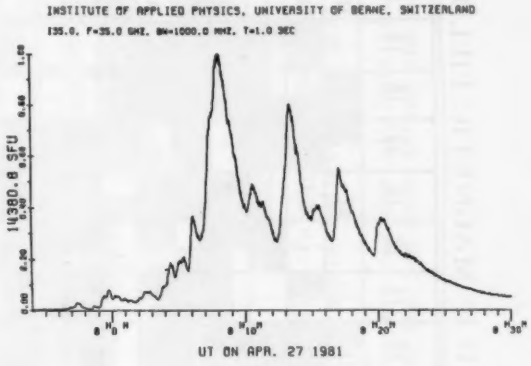
SELECTED SOLAR NOISE BURSTS

APRIL 20-27, 1981









INFERRED IP MAGNETIC FIELD

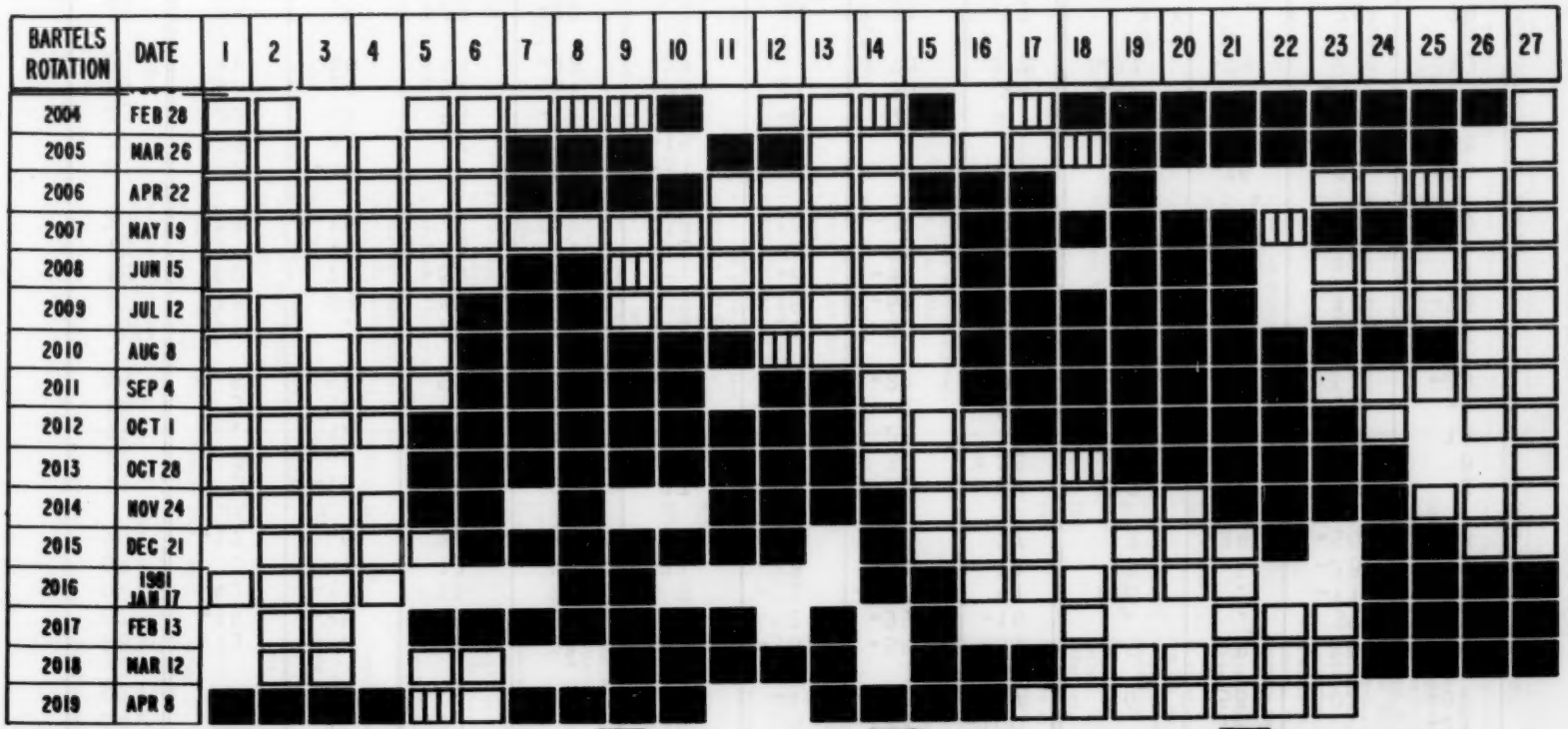
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2001	DEC 14				-				TA		TA	-	-	AT	-			AT		AT	*			TA	AT	T*		
2002	[SB] JAN 10						AT		-		-		-	TA	AT		T*	TA	AT							TA		A*	
2003	FEB 6		TA			-				A*							TA				-			*	TA	TA			
2004	MAR 4		AT		TA		AT		-	-	TA	-			T*		AT	AT		TA		AT		AT	TA		TA	-	-
2005	MAR 31		TA	AT	AT	AT		AT	TA	T*		AT				TA	TA			TA			TA	AT	AT	AT	TA	TA		
2006	APR 27		AT				AT	-				TA	AT		TA			TA	AT	AT						TA	AT	*		TA	
2007	MAY 24			AT		AT		*	*	-	-	-	-	TA	AT				*	TA		-	TA			TA		-	TA	
2008	JUN 20		-				AT			-	-				-	-							TA			TA		TA		
2009	JUL 17		-	AT		-						-			TA	TA		-	AT	AT		-	-	-	-	-	A*	-	-	
2010	AUG 13		AT					-	AT	-						-		-	AT					TA		-	A*			
2011	SEP 9							TA		AT					TA		TA										TA			
2012	OCT 6							*		TA	TA		AT	A*		A*							TA			TA				
2013	NOV 2	AT					TA		TA			AT	A*									-	TA	-	AT			TA			
2014	NOV 29				-					-	-				TA		TA	TA	AT	-			AT				-		TA		
2015	DEC 26									-	-					-	TA	-	TA	-	-	-	-	-	-	AT		AT		-	-	-
2016	[SB] JAN 22	TA	-			AT	T*		-			AT	TA			TA					-					AT					TA	
2017	FEB 18				AT		TA							TA		TA			*						AT		TA			TA	
2018	MAR 17								AT						-					TA				AT		-	-			TA	AT	
2019	APR 13	TA		-		-		-			-				TA					*											

▒ = definitely towards the sun □ = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

NOTE: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1980								1981			
day	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL
01	-7	37	-51	-5	-19	44	-41	-82	-111	33	.	75
02	9	13	.	.	5	59	-94	.	.	20	54	82
03	26	-16	-25	8	8	53	-120	.	-33	64	.	31
04	55	-45	-23	7	29	26	-123	-100	7	72	.	-23
05	21	-57	-19	10	42	-4	-111	-97	46	58	102	-67
06	-13	-42	.	24	42	-36	-84	-67	66	28	81	-85
07	-34	-25	8	53	23	-62	-99	-16	.	.	39	-97
08	-42	-11	11	53	9	-73	-107	41	116	.	-11	-76
09	.	-1	13	44	-27	-72	-61	71	49	-6	-28	-40
10	-17	-6	23	37	-68	-39	28	77	13	-24	-50	-28
11	.	-18	44	27	-77	-41	27	57	-29	-42	-58	-7
12	.	-4	42	8	-84	-45	38	28	.	-26	.	0
13	.	12	34	-37	-62	-10	26	3	-39	.	18	13
14	5	56	.	-63	.	10	-1	-52	-13	15	35	-6
15	5	54	57	-65	-39	38	-21	-93	8	24	.	-29
16	-1	.	26	-56	-16	20	-50	-86	18	.	37	-61
17	16	63	-42	44	7	-15	-68	-51	62	-8	12	-75
18	50	71	-69	-24	.	-8	-81	26	67	-19	.	.
19	73	55	-43	1	-18	-2	-63	37	67	-62	.	.
20	78	15	5	23	-38	-16	-24	39	37	-65	-41	-85
21	92	-40	32	24	-31	-14	.	.	.	-76	-80	-79
22	120	-43	47	11	-15	-17	.	51	.	-70	-119	-86
23	122	-1	53	-11	-7	-8	97	41	.	-68	-87	-51
24	46	33	57	-31	-22	31	80	28	-52	.	-81	5
25	14	49	53	-38	-21	.	70	7	-87	-75	.	43
26	25	37	27	-27	8	54	31	-13	.	.	-88	70
27	64	46	-8	-27	18	52	28	-20	.	-8	-52	67
28	57	54	-33	-18	18	48	-3	-42	.	.	-20	84
29	62	6	-42	-14	18	44	-26	-65	.		31	122
30	49	-22	-29	-18	25	57	.	-88	-59		45	61
31	49		-6	-10		.		-95	-4		55	

DOT SYMBOL INDICATES NO DATA AVAILABLE FOR THE DAY.

BOULDER GEOMAGNETIC SUBSTORM LOG

APRIL 1981

DATE	ONSET TIME	DIR	COMMENTS
04/01			Field unsettled all day.
	0920	≈ center	
	1600		
	1855		SS effect confined to Alaskan stations.
04/02	0800		Weak onset, recovery near 1000 UT.
	1215		Slow onset, recovery near 1500 UT.
04/03			Field unsettled after 1300 UT with no distinctive SS activity.
04/04			Field intermittently unsettled.
04/05			Field slightly unsettled.
04/06			Field unsettled 0500-1500 UT.
	0530	East	
	1315		Slow onset SS.
04/07			Field intermittently unsettled.
	1220		SS most noticeable at College.
	1954	SSC	Field unsettled.
04/08			Field intermittently unsettled with no distinctive SS activity.
04/09			Field slightly unsettled.
04/10	0945		Weak SS, slow onset.
	1640		Minor bay evident at Eusebio, Boulder and Tucson.
04/11	0724	SSC	Intermittent mag storm conditions through end of day.
04/12			Minor mag storm conditions throughout the day.
04/13			Mag storm continues through 1000 UT., field intermittently active balance of day. Mid/low latitude stations at major storm level through 0800 UT. Aurora observed throughout Gulf Coastal area (N30).
04/14			Field unsettled with no distinctive SS activity.
04/15			Field quiet through 1000 UT then slightly unsettled balance of day.
04/16	1000		Several minor injections with recovery near 1330 UT. SS signature confined to auroral oval stations.
04/17	0610	East	
	0800	East	
	1040		Weak SS.
	1325		Slow onset, several minor injections with recovery near 1800 UT.
04/18	1500		Positive impulse H-component evident all network stations. Field unsettled balance of day.
	2020		Small positive impulse H-component all mid/low latitude stations.
04/19			Field intermittently active.
	0205	East	SS signature localized in Boulder-Tucson area. Both stations in partial ring current sector.
	0310	East	SS signature localized in Boulder-Tucson area. Both stations in partial ring current sector.
	1030		Moderate SS.
	1400		Numerous injections with recovery near 1830 UT.
04/20			Field intermittently active.
	0345	East	
	0430		SS signature evident mid/low latitude stations only. Strongest response Boulder-Tucson area.
	0540	≈ center	
	1410		Slow onset SS vicinity College, Talkeetna.
	1510		Major injection into existing SS.
	1915		SS onset at College with slow expansion northward through Alaska.
04/21			Field active all day. Numerous minor injections producing high frequency oscillations in field components.
	0740	West	
	0945	West	
04/22			Field active.
	1120		SS localized from Talkeetna to Arctic Village.
	1340	West	
	1810		
04/23			Field active through 1500 UT.
	0535		
	0605		Strong polar cap SS Sachs Harbour-Cape Parry.
	0905		Numerous injections with recovery near 1330 UT.
04/24			Field active 1000-2000 UT. Mid/low latitude field only unsettled.
	0500	East	Weak SS.
	0920		
	1105		
	1130		Moderate polar cap SS Sachs Harbour-Cape Parry.
	1640		Localized SS Norman Wells to Arctic Village to Inuvik.
04/25			Field unsettled with no distinctive SS activity.
04/26	0813	SSC	Immediate onset of strong auroral SS. Magstorm follows.
	1410		Moderate SS.
04/27			Magstorm continues through 1800 UT.
04/28	1505		
	2105		Polar Cap SS.
04/29	1040	West	Strong SS, numerous injections with recovery near 1430 UT.
	1530	West	Moderate SS, several injections with recovery near 2000 UT.
04/30			Field slightly unsettled.

DOT SYMBOL INDICATES NO DATA AVAILABLE FOR THE DAY.

MARCH 1981 DATA

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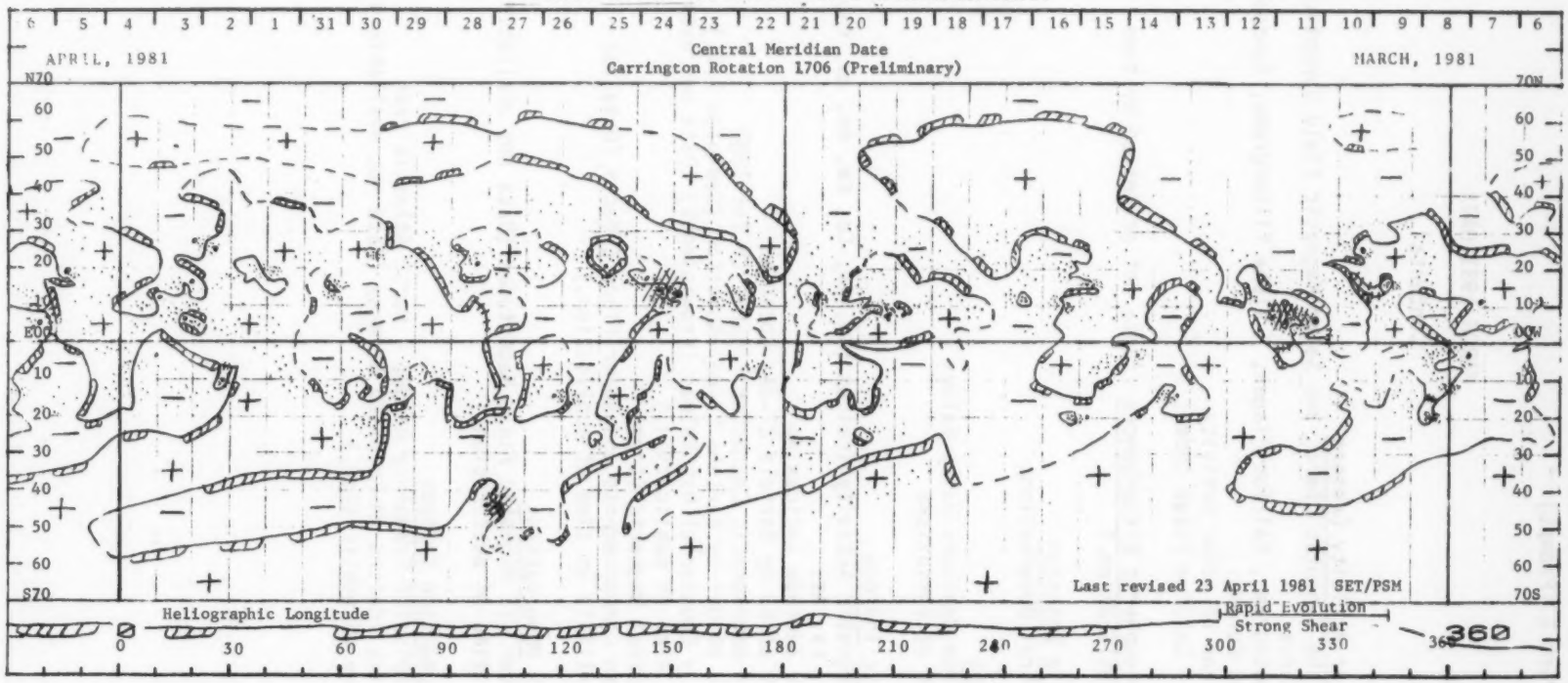
Hα SYNOPTIC CHART

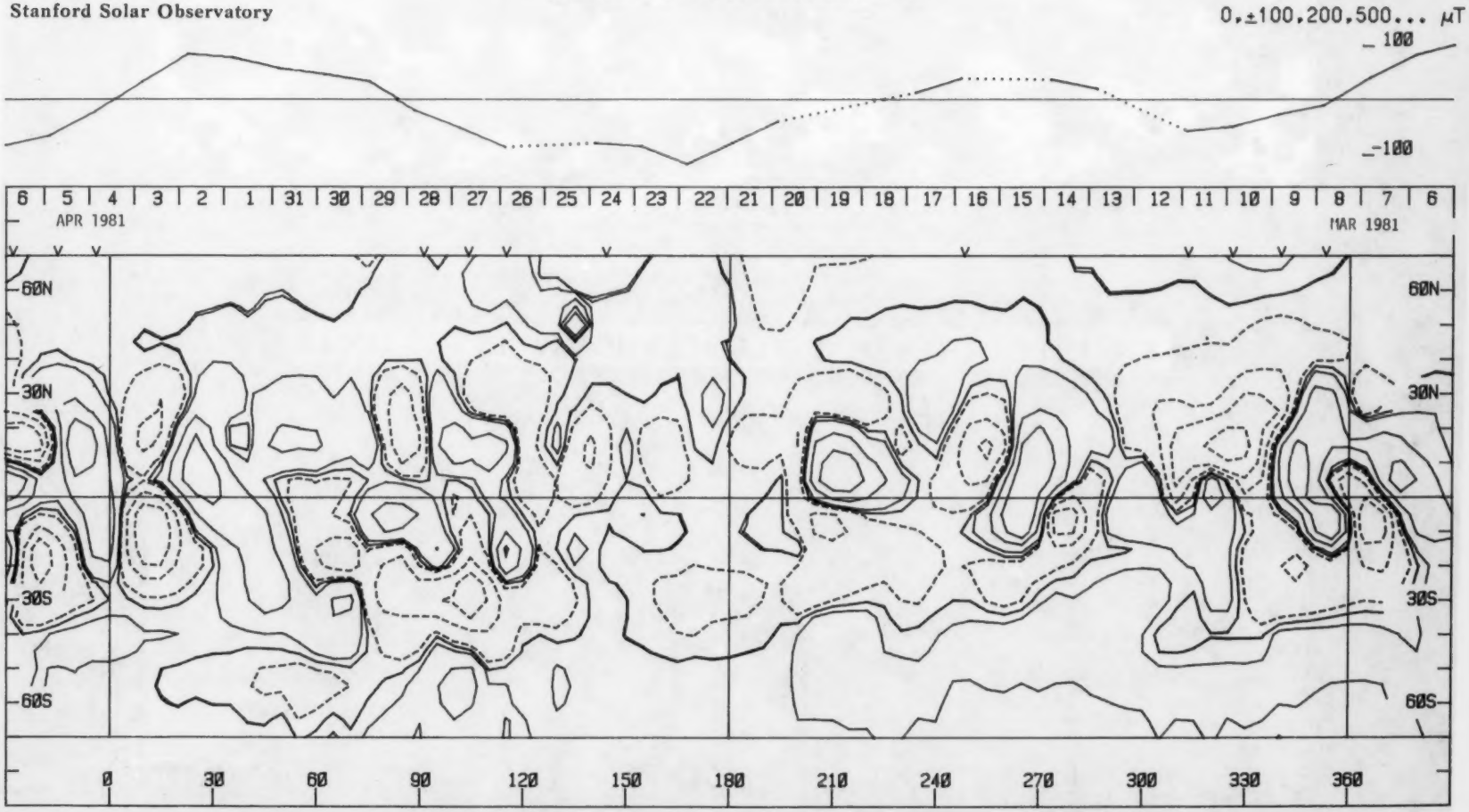
CARRINGTON ROTATION 1706 (PRELIMINARY)



Last revised 4/23/81 SET/PSM

SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1706

Stanford Solar Observatory

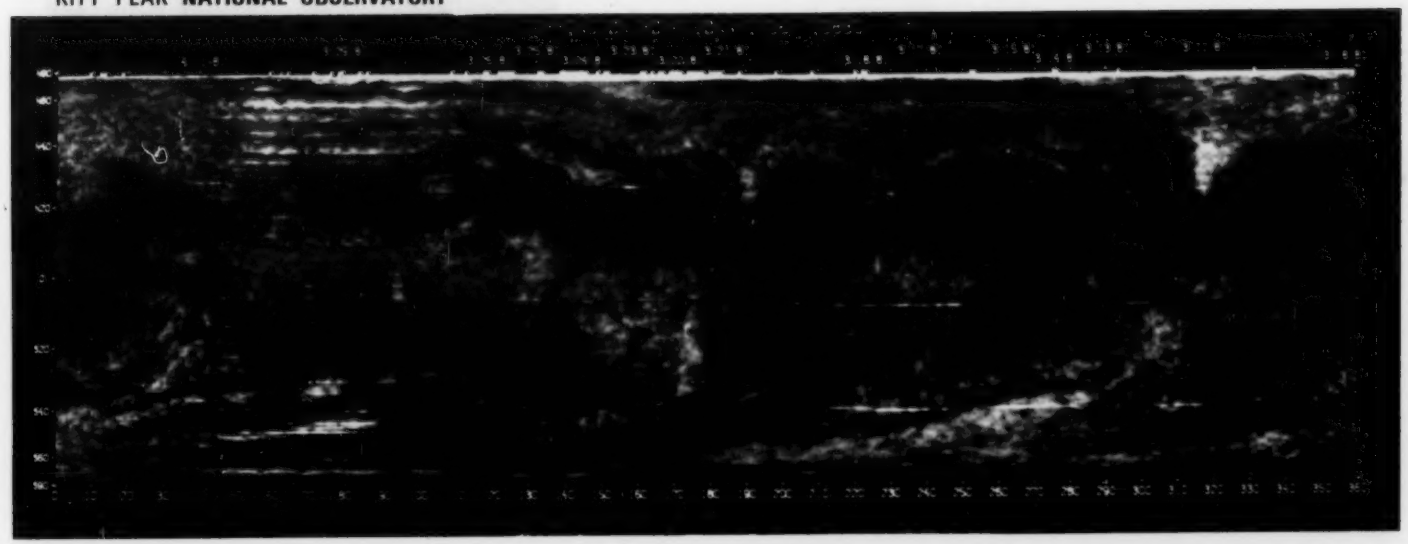


55
Mar 81

KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1706

KITT PEAK NATIONAL OBSERVATORY



MARCH 1, 1981 (P=-21.55, B_o=-7.22, L_o=97.54)

SACRAMENTO PEAK Np CORONA
5303 Å

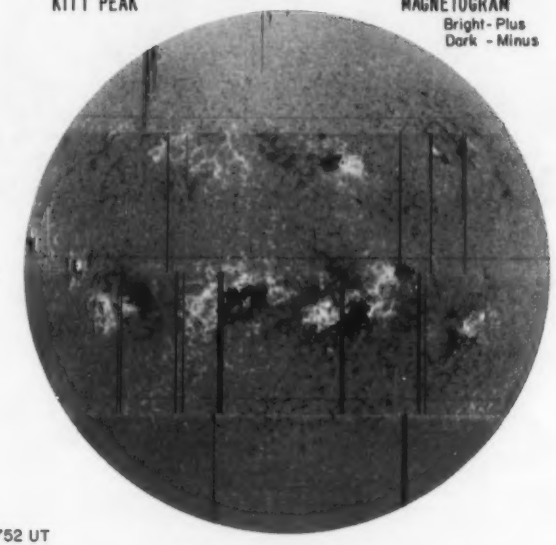
E NO DATA MARCH 1, 2, 3, 4, 5, 6, 9, 10, 12, 16, 20, 21, 26, 27, 28 W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1752 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA MARCH 1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 19, 20, 21, 22, 26, 27, 28, 30 W

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

Sp

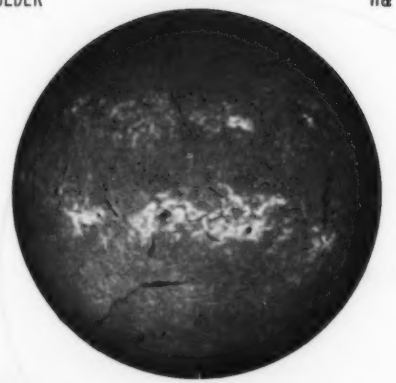
01

01

BOULDER Hα

Np

E W



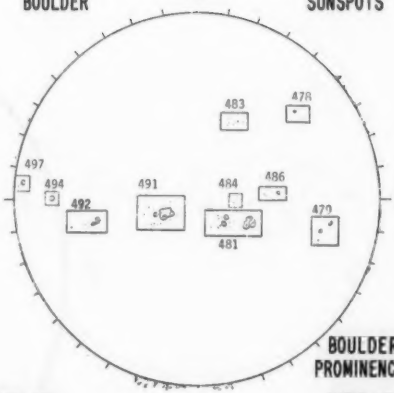
1637 UT

Sp

BOULDER SUNSPOTS

Np

E W



1645 UT

Sp

HALE OBSERVATORIES

Np

E W

NO DATA MARCH 1, 2, 4, 6, 7, 13, 14, 19, 20, 21, 22, 26, 28

BOULDER PROMINENCES

1637 UT

Sp

CALCIUM REPORT

W

STANFORD

Np

E

NO DATA MARCH 1, 2, 3, 4, 6, 7, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 29, 31

W

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

± 100

± 200

Sp

MARCH 2, 1981 (P=-21.80, B_o=-7.23, L_o=84.37)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Sp

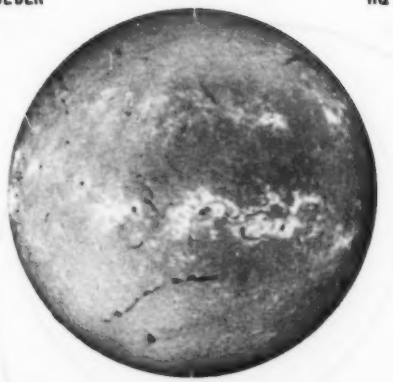
Levels
± 5
± 10
± 20
± 40
± 80

02

BOULDER Np BOULDER Np Np

02

BOULDER Np Hα

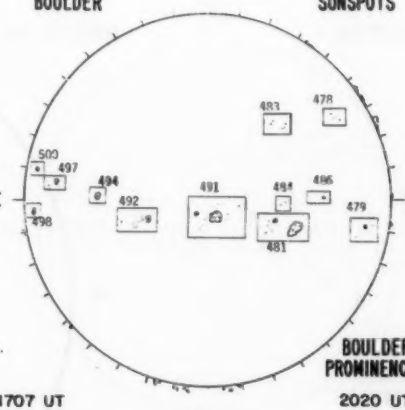


E W

2020 UT

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W

1707 UT

Sp

BOULDER PROMINENCES

2020 UT

Np CALCIUM REPORT

NO DATA

E W

Sp

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

± 100

± 200

•

•

•

Sp

MARCH 3, 1981 (P=-22.04, B_o=-7.24, L_o=71.19)

SACRAMENTO PEAK Np CORONA 5303 Å

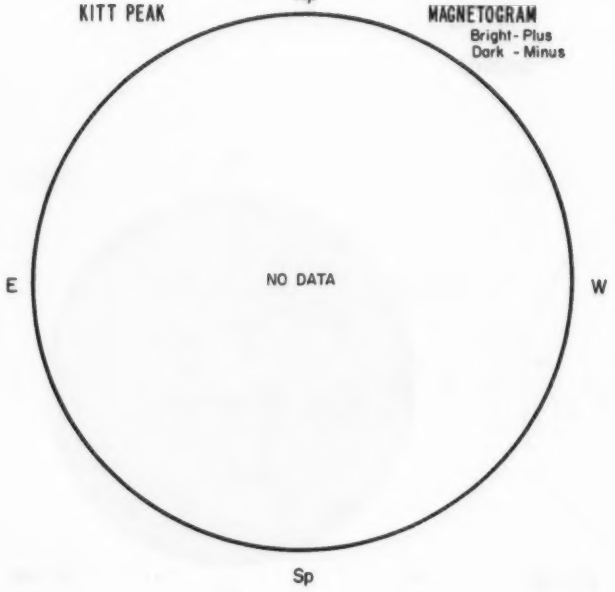
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Sp

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± 80

03

03

BOULDER

Np

E

NO DATA MARCH 3, 7, 20, 21, 24, 28

W

Sp

Hα

SAN FERNANDO

Np

500 497 498 494 492 491 483 478 484 486 479 481

E W

1615 UT

Sp

SUNSPOTS

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

E W

2308 UT

Sp

CALCIUM REPORT

POOR	JA

78- 0500-3.0
79- 0300-2.5
81- 2800-4.0
83- 1100-3.5
84- 0500-3.0
86- 0700-3.0
87- 1100-4.0
89- 0400-3.0
91- 5400-3.5
92- 1000-3.5
93- 1600-3.5
94- 0400-2.5
95- 0100-2.5
96- 0400-2.5
97- 1300-4.0
98- 2700-4.0
99- 0400-3.0
00- 0900-4.0
01- 1300-4.0
02- 1300-3.5

STANFORD

Np

E

NO DATA

W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

•

•

63

Mar 81

MARCH 4, 1981 (P=-22.28, B_o=-7.24, L_o=58.02)

SACRAMENTO PEAK

Np

CORONA
5303 Å

E

NO DATA

W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

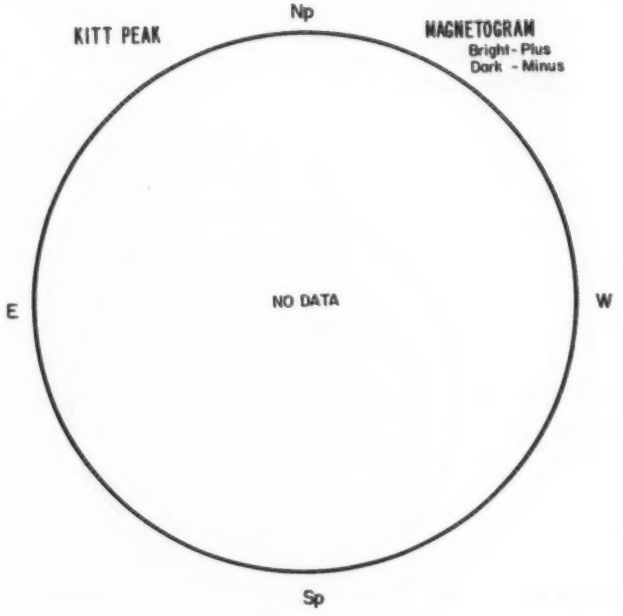
W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright-Plus
Dark - Minus



Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

04

Np

Np

Np

SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

04

BOULDER

Np

E W

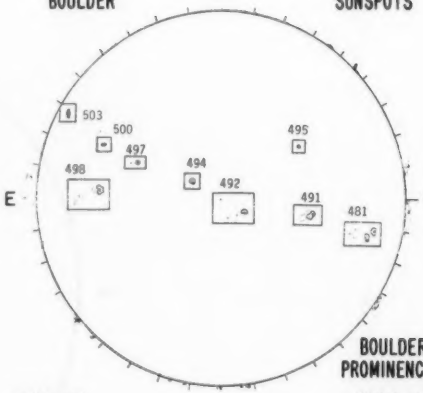
2000 UT

Sp

Hα

BOULDER

Np



E W E W E

2010 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

NO DATA

W E

BOULDER PROMINENCES

2000 UT

Sp

CALCIUM REPORT

Np

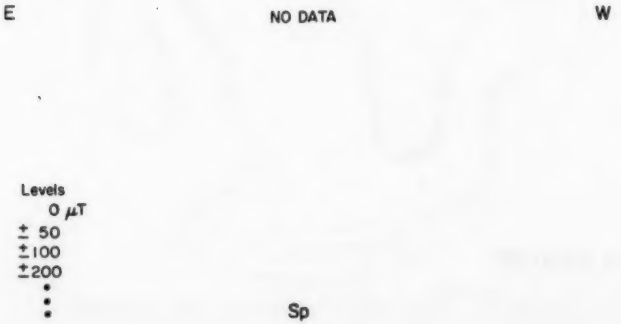
NO DATA

W

Sp

STANFORD

Np



MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

55

Mar 81

MARCH 5, 1981 (P=-22.51, B_o=-7.25, L_o=44.84)

SACRAMENTO PEAK Np CORONA 5303 Å

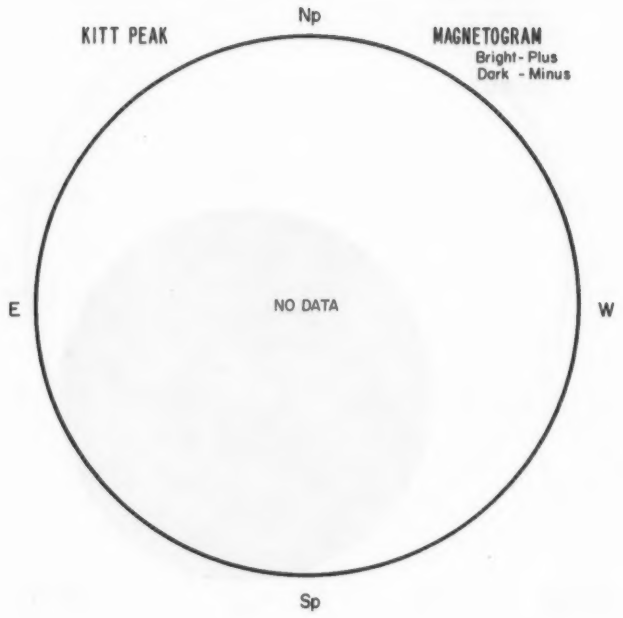
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Sp

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

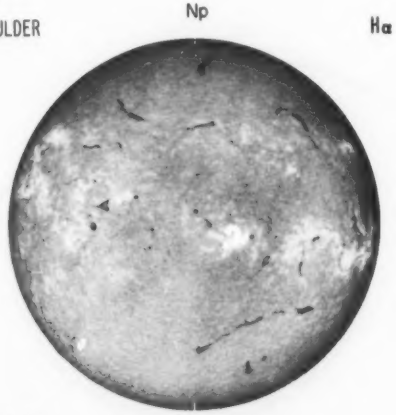
05

BOULDER Np H_α BOULDER Np SUNSPOTS WILCOX OBSERVATORY Np

Sp

05

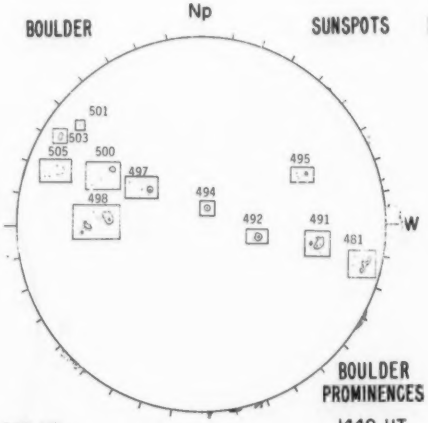
BOULDER



1440 UT

Hα

BOULDER



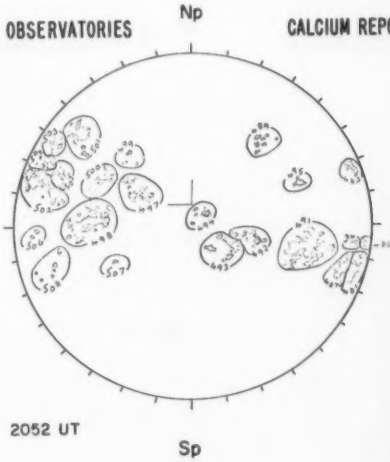
1445 UT

SUNSPOTS

BOULDER PROMINENCES

1440 UT

HALE OBSERVATORIES



2052 UT

CALCIUM REPORT

FAIR | JA

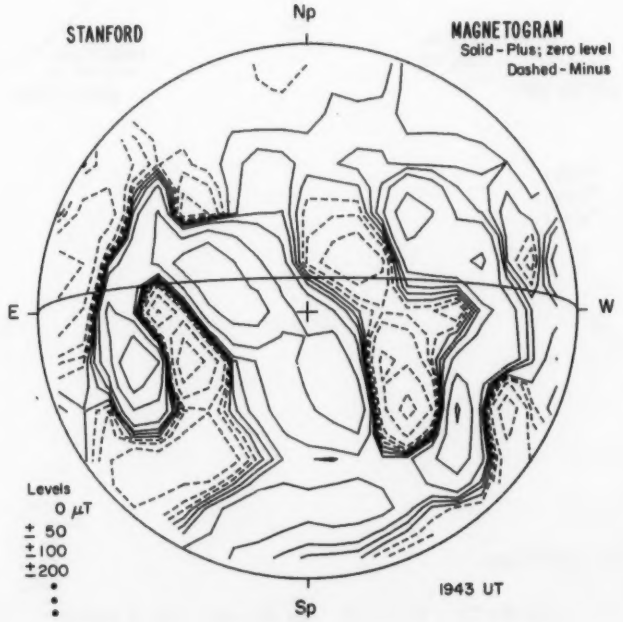
81- 1500-3.5
83- 0600-3.5
84- 0200-3.0
86- 0300-3.0
87- 1000-3.5
89- 0500-3.0
91- 3900-4.0
92- 0800-3.0
93- 1000-3.5
94- 0300-2.5
95- 0400-3.0
97- 1000-4.5
98- 3100-4.5
99- 0300-3.0
00- 1000-3.5
01- 1600-4.5
02- 2700-4.0
03- 0800-4.0
04- 0700-3.0
05- 1200-4.0
06- 0200-3.0
07- 0100-2.5
08- 0400-3.0

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



1943 UT

67
Mar 81

68
Mar 81

MARCH 6, 1981 (P=-22.73, B_o=-7.25, L_o=31.67)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

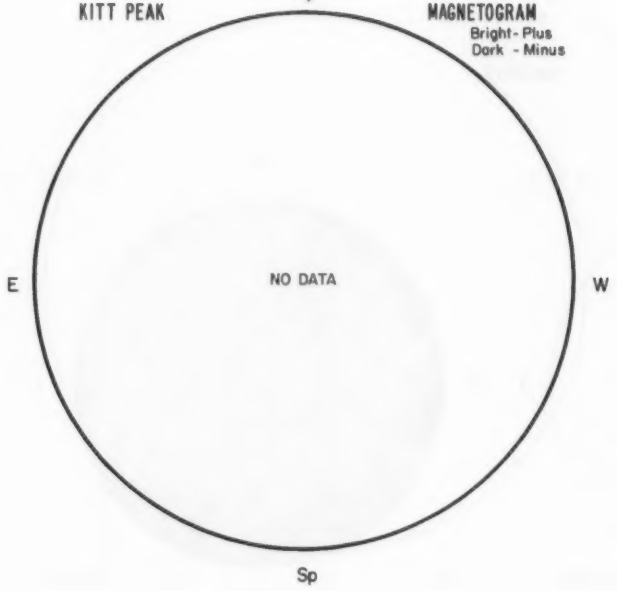
Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

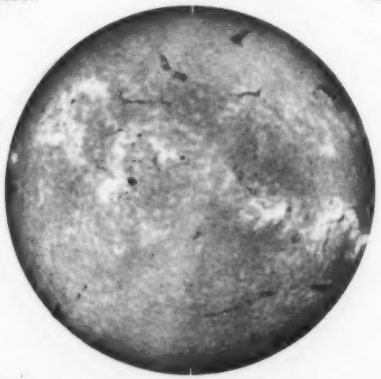
Sp

06

06

BOULDER

Np



E W

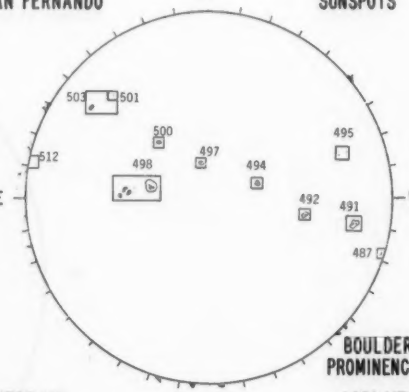
1451 UT

Sp

Hα

SAN FERNANDO

Np



E W

1740 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

E W

1451 UT

Sp

CALCIUM REPORT

Np

NO DATA

E W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

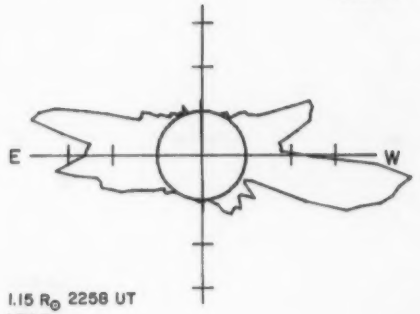
Sp

69

Mar 81

MARCH 7, 1981 (P=-22.95, B_o=-7.25, L_o=18.50)

SACRAMENTO PEAK Np CORONA 5303 Å

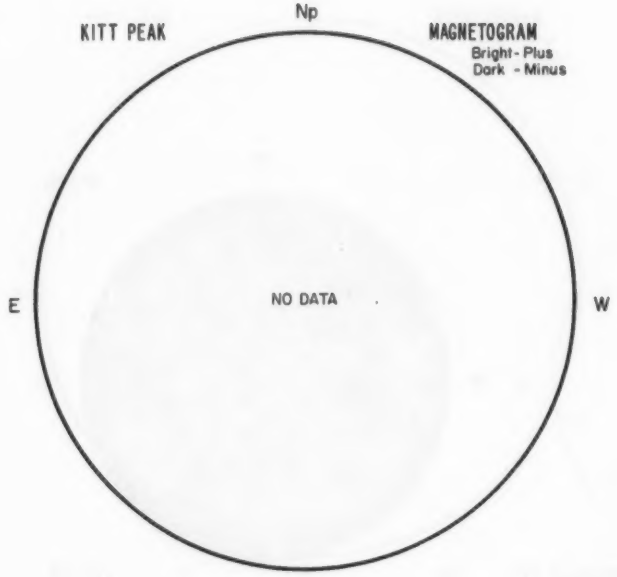


1.15 $R_\odot$ 2258 UT
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

Levels
± 5
± 10
± 20
± 40
± 80

07

Sp

Sp

07

BOULDER

Np

E

NO DATA

W

Sp

Hα

SAN FERNANDO

Np

503

513

512

500

509

498

497

494

510

492

491

E

W

E

2215 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

NO DATA

Np

NO DATA

W

Sp

CALCIUM REPORT

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

Sp

71

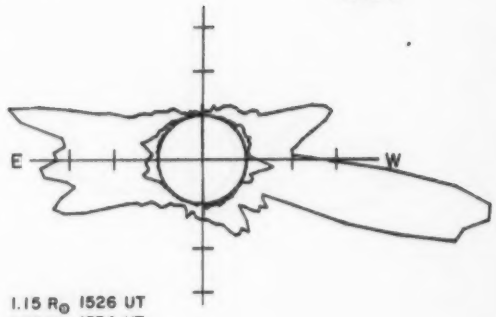
Mar 81

MARCH 8, 1981 (P=-23.16, B_o=-7.25, L_o=5.32)

SACRAMENTO PEAK

Np

CORONA
5303 Å



1.15 $R_\odot$ 1526 UT
1.35 $R_\odot$ 1534 UT
1.55 $R_\odot$ 1543 UT

Sp

Np

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E W

1438 UT

Sp

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E NO DATA W

Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

Sp

1438 UT

Sp

Sp

08

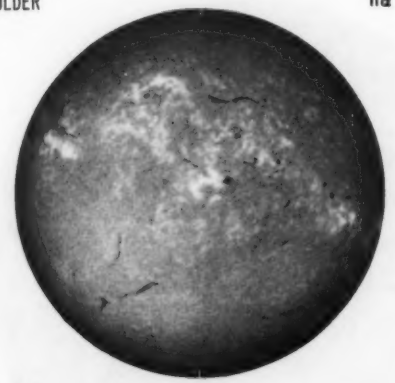
BOULDER

Np

Hα

E

W



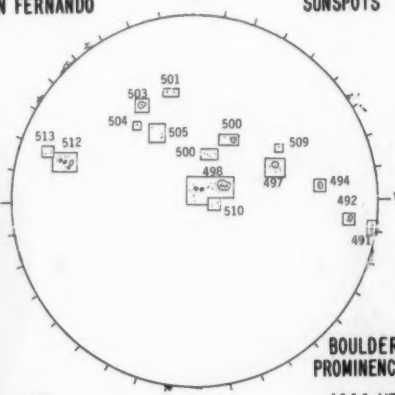
1444 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

1715 UT

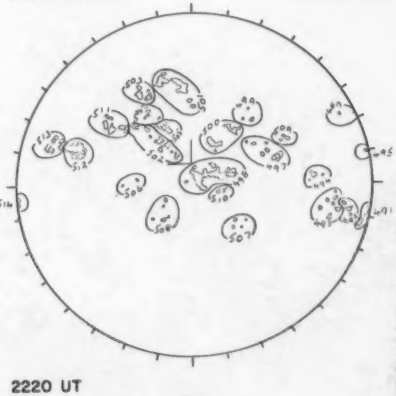
Sp

BOULDER PROMINENCES

1444 UT

HALE OBSERVATORIES

Np



E

W

2220 UT

Sp

CALCIUM REPORT

Q000	JA
91-	0600-3.0
92-	0400-3.0
93-	0600-3.5
94-	0300-3.0
95-	0100-2.5
97-	0600-3.0
98-	1900-4.0
99-	0200-2.5
00-	0700-3.0
01-	1400-3.5
02-	0800-3.0
03-	0600-3.0
04-	0300-3.0
05-	0400-3.0
06-	0100-2.5
09-	0200-3.0
10-	0100-3.0
11-	0800-3.0
12-	1200-3.5
13-	0700-3.5
14-	0300-3.0

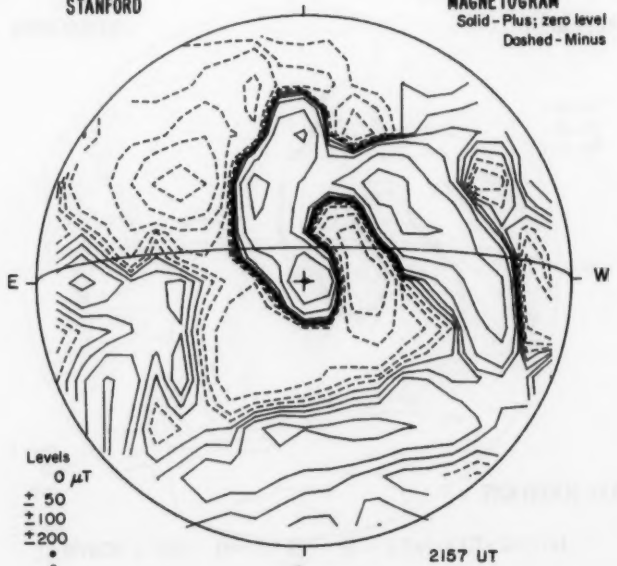
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

•

2157 UT

Sp

MARCH 9, 1981 (P=-23.37, B_o=-7.24, L_o=352.14)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

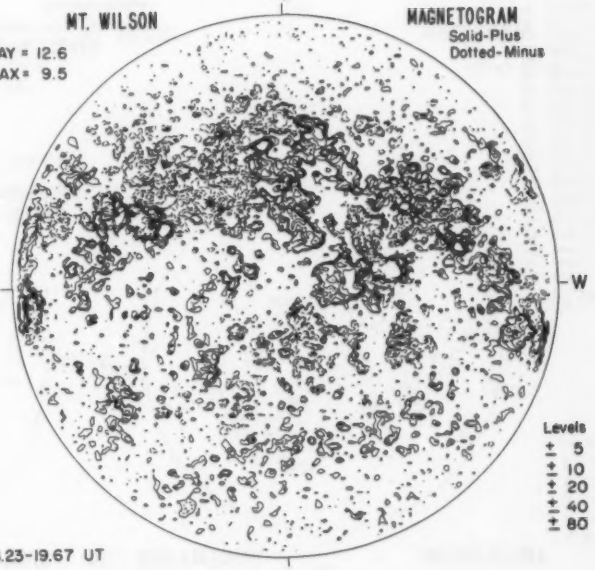
E W

1526 UT

Sp

Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5



E W

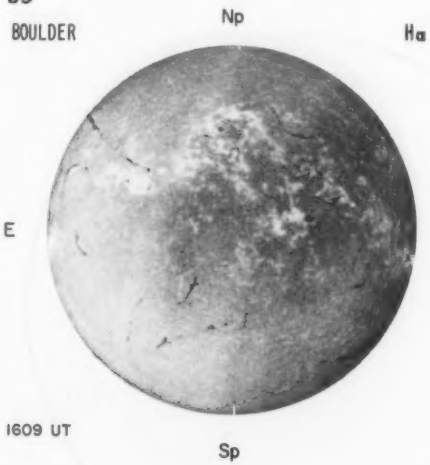
Levels
± 5
± 10
± 20
± 40
± 80

18.23-19.67 UT

Sp

09

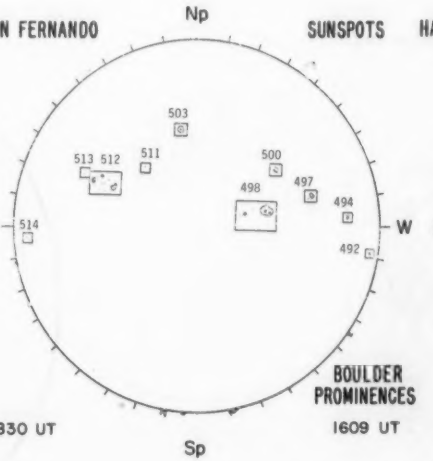
BOULDER



1609 UT

Hα

SAN FERNANDO



1830 UT

SUNSPOTS

BOULDER PROMINENCES

1609 UT

HALE OBSERVATORIES

1915 UT

CALCIUM REPORT

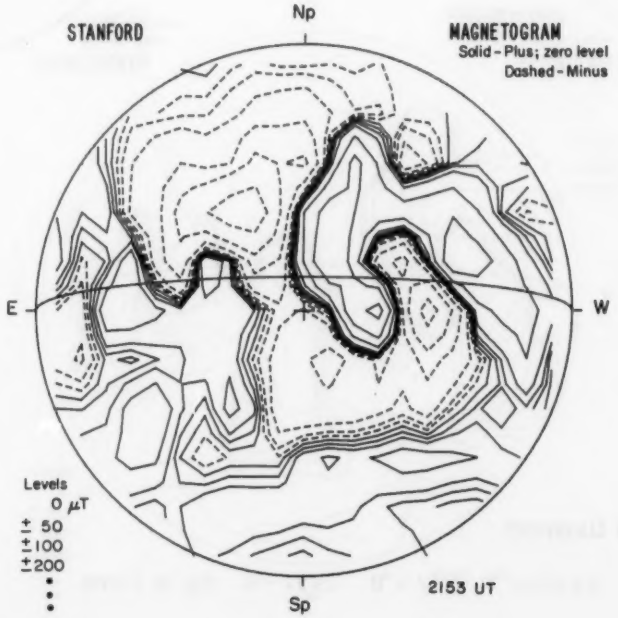
GOOD	JA

93- 0800-3.0
97- 0600-3.0
98- 1600-3.5
99- 0200-3.0
00- 0600-3.0
01- 1300-3.0
02- 0800-3.0
03- 0600-3.0
04- 0300-2.5
05- 0400-3.0
09- 0100-2.5
10- 0100-3.0
11- 2100-3.0
12- 2000-4.0
13- 0700-3.5
14- 0800-2.5

STANFORD

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



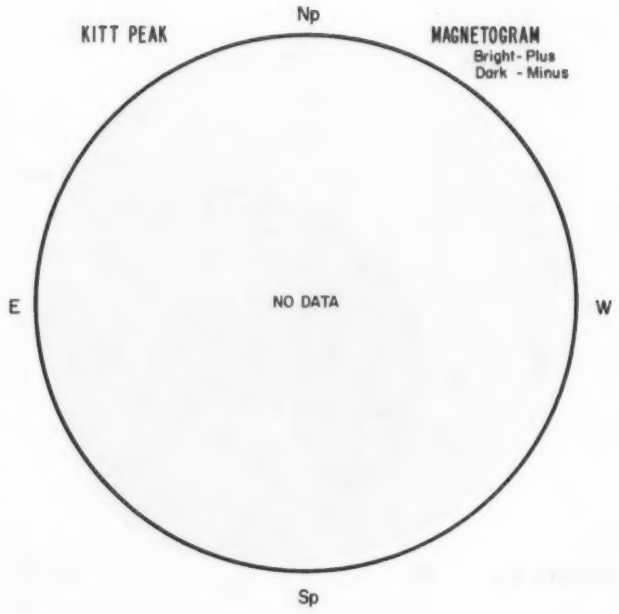
2153 UT

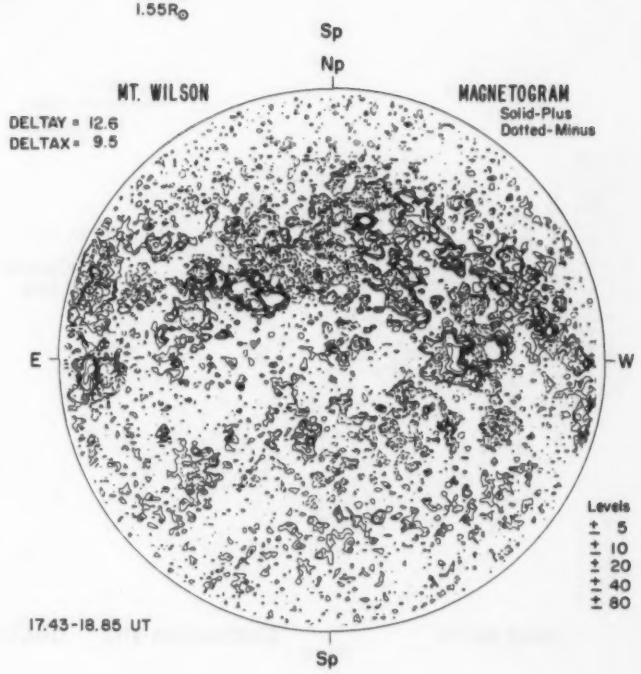
MARCH 10, 1981 (P=-23.57, B_o=-7.23, L_o=338.97)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

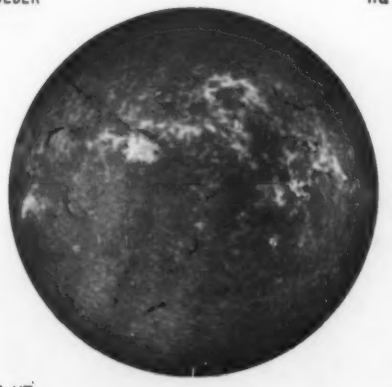
1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$





BOULDER

Np



E W

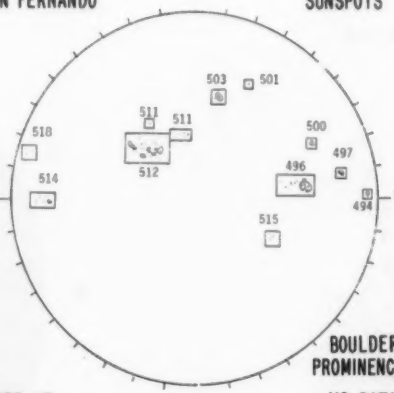
Sp

1613 UT

Hα

SAN FERNANDO

Np



E W

Sp

1955 UT

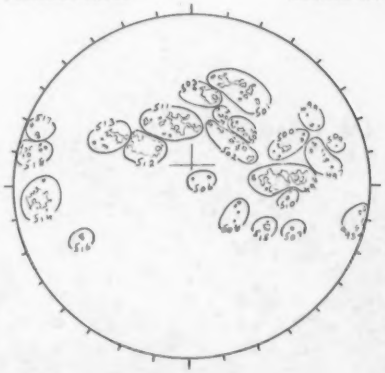
SUNSPOTS

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np



E W

Sp

1833 UT

CALCIUM REPORT

G000	JA

93- 0400-3.0
97- 0500-3.0
98- 2400-3.5
99- 0200-2.5
00- 0400-3.0
01- 1200-3.0
02- 0800-3.0
03- 1100-3.0
04- 0200-3.0
05- 0400-3.0
06- 0200-2.5
09- 0100-2.5
10- 0100-3.0
11- 1800-3.0
12- 2300-4.0
13- 0800-3.5
14- 1500-3.0
15- 0200-3.0
16- 0100-3.0
17- 0300-2.5
18- 0900-2.5

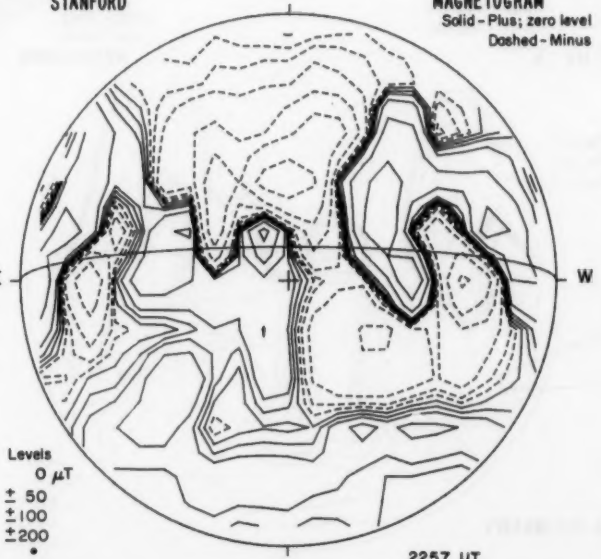
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

Sp

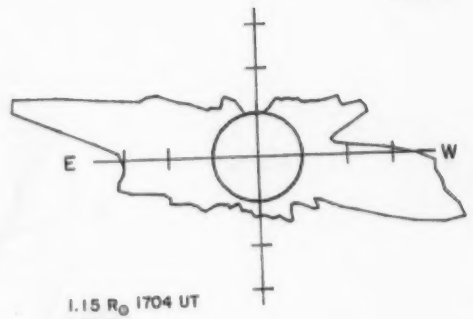
2257 UT

MARCH 11, 1981 (P=-23.76, B_o=-7.22, L_o=325.79)

SACRAMENTO PEAK

Np

CORONA
5303 Å



1.15 $R_\odot$ 1704 UT
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

1451 UT

Sp

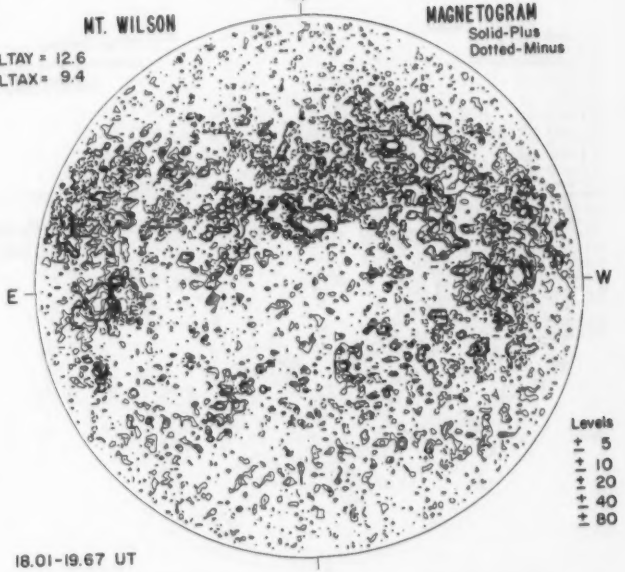
Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



18.01-19.67 UT

Sp

BOULDER

Np

E

W

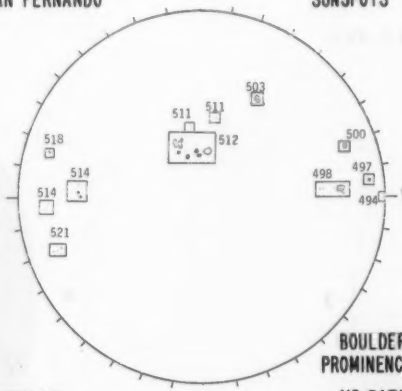
Sp

1540 UT

Hα

SAN FERNANDO

Np



E

W

Sp

1738 UT

SUNSPOTS

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

E

W

Sp

1931 UT

CALCIUM REPORT

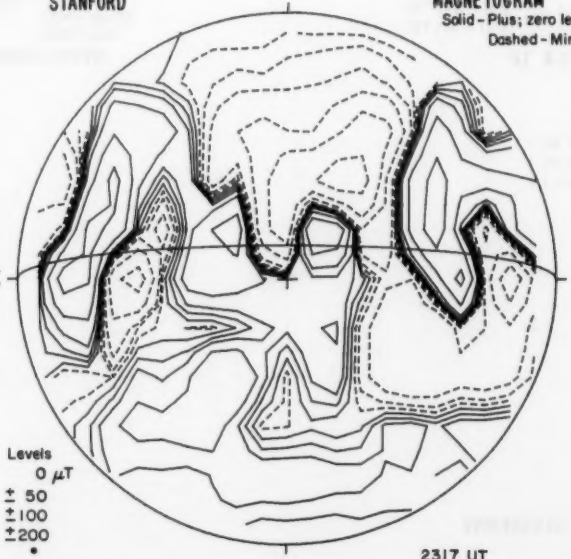
G000	JA

97- 0200-2.5
98- 1500-3.0
99- 0100-2.5
00- 0400-3.0
01- 1300-3.0
02- 0600-3.0
03- 0500-3.0
04- 0100-2.5
05- 0300-3.0
10- 0100-3.0
11- 1400-3.0
12- 1900-3.5
13- 0400-3.5
14- 2100-3.5
15- 0100-3.0
17- 0500-3.0
18- 0400-3.0
21- 0200-3.0
22- 0200-3.0
23- 0900-3.0

STANFORD

Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



E

W

Levels
0 μT
± 50
±100
±200
• • •

Sp

2317 UT

MARCH 12, 1981 (P=-23.94, B_o=-7.21, L_o=312.61)

SACRAMENTO PEAK Np CORONA 5303 Å

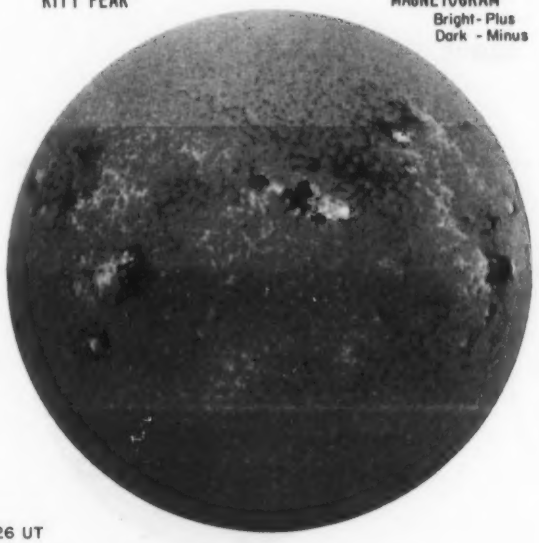
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1526 UT

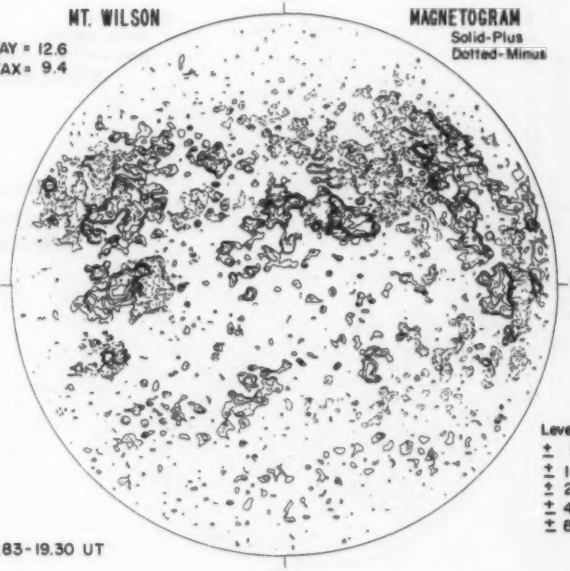
Sp

MT. WILSON

Sp
Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels
± 5
± 10
± 20
± 40
± 80

17.83-19.30 UT

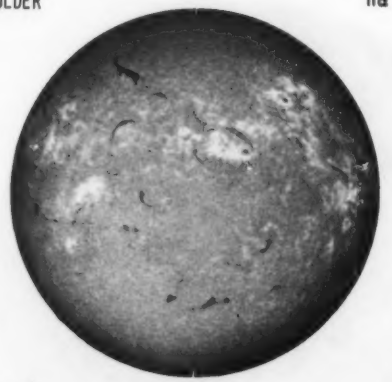
Sp

Sp

12

BOULDER

Np



E W

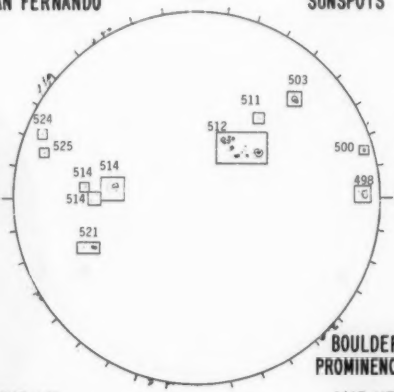
1415 UT

Sp

Hα

SAN FERNANDO

Np



E W

2215 UT

Sp

SUNSPOTS

BOULDER PROMINENCES

1415 UT

HALE OBSERVATORIES

Np

E W

1901 UT

Sp

CALCIUM REPORT

GOOD	JA

98- 1900-3.0
00- 0300-3.0
01- 1100-3.0
02- 0500-3.0
03- 1100-3.5
04- 0100-3.0
05- 0200-3.0
11- 1300-3.0
12- 2300-3.5
13- 0600-3.0
14- 2200-3.5
17- 0600-3.0
18- 0400-3.0
19- 0200-3.0
20- 0100-2.5
21- 0200-3.0
22- 0200-3.0
23- 1100-3.0
24- 0200-2.5
25- 0200-3.0

STANFORD

Np

NO DATA

E W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

81

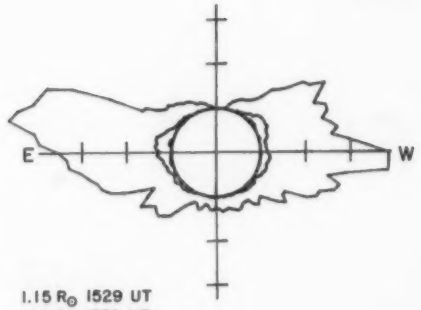
Mar 81

MARCH 13, 1981 (P=-24.12, B_o=-7.20, L_o=299.43)

SACRAMENTO PEAK

Np

CORONA
5303 Å



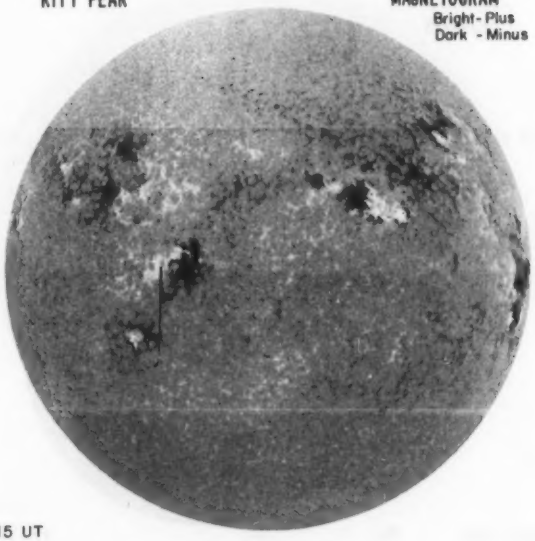
1.15 $R_\odot$ 1529 UT
1.35 $R_\odot$ 1509 UT
1.55 $R_\odot$ 1518 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1515 UT

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX=

E

NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

13

BOULDER

Np

Np

1515 UT

Sp

Sp

13

BOULDER

Np

E W

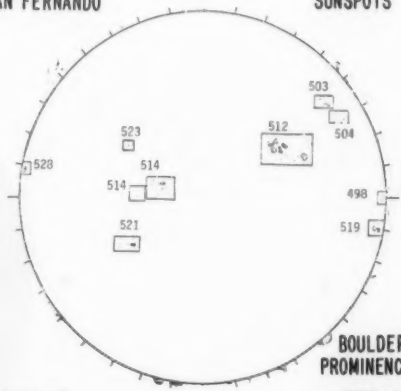
1758 UT

Sp

Hα

SAN FERNANDO

Np



E W E

2240 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

1758 UT

Sp

CALCIUM REPORT

Np

NO DATA

E W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

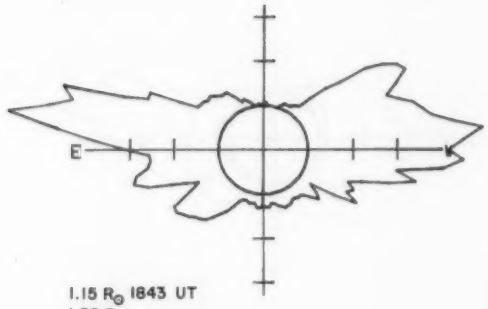
Sp

83

Mar 81

MARCH 14, 1981 (P=-24.29, B_o=-7.18, L_o=286.25)

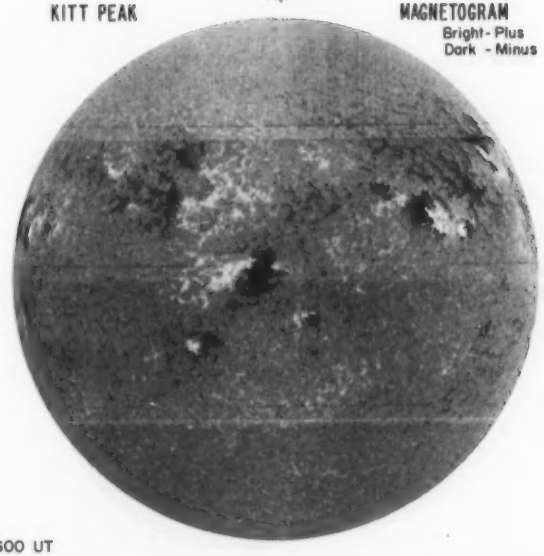
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1843 UT
1.35 $R_\odot$
1.55 $R_\odot$

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



1600 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

Sp

Np Np Np

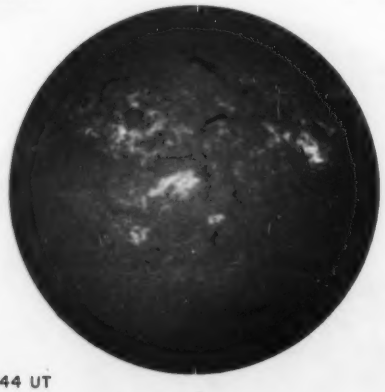
Sp

Sp

14

BOULDER

Np



E W

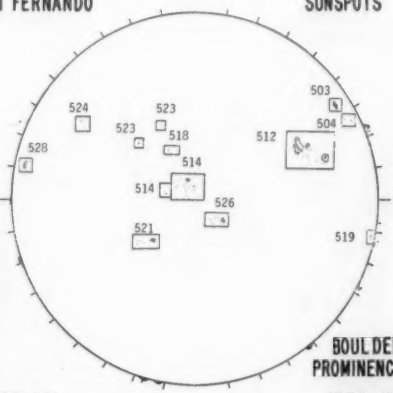
1544 UT

Sp

Hα

SAN FERNANDO

Np



E W

1730 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

1544 UT

Sp

CALCIUM REPORT

Np

NO DATA

E W

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

Sp

85

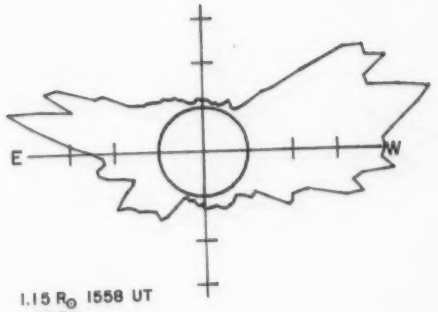
Mar 81

MARCH 15, 1981 (P=-24.46, B_o=-7.16, L_o=273.07)

SACRAMENTO PEAK

Np

CORONA
5303 Å



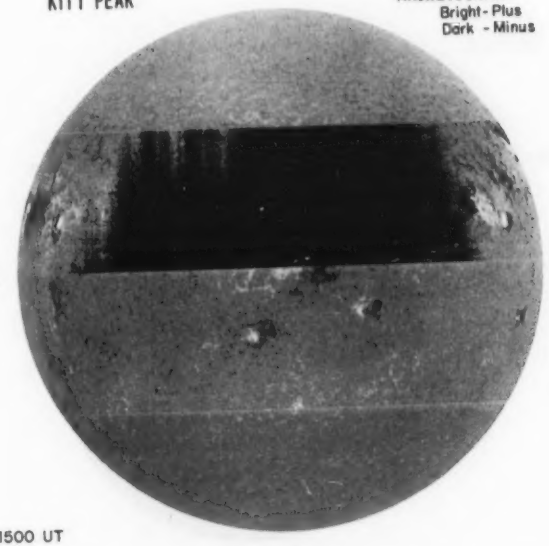
1.15 $R_\odot$ 1558 UT
1.35 $R_\odot$
1.55 $R_\odot$

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1500 UT

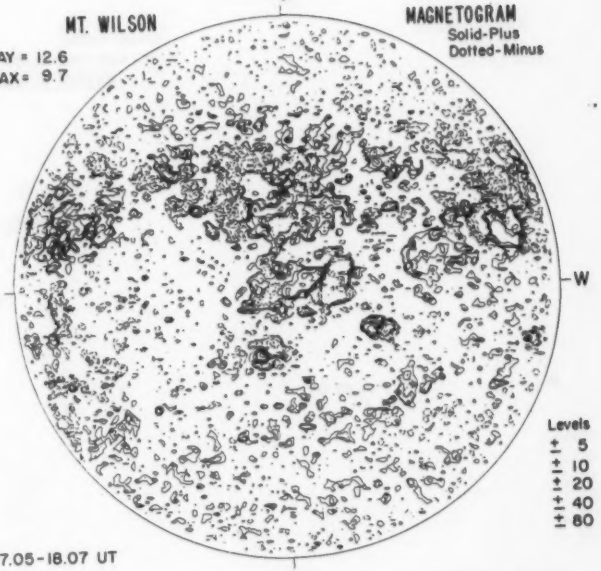
Sp

MT. WILSON

DELTAY = 12.6
DELTAX = 9.7

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus



17.05-18.07 UT

Sp

1500 UT

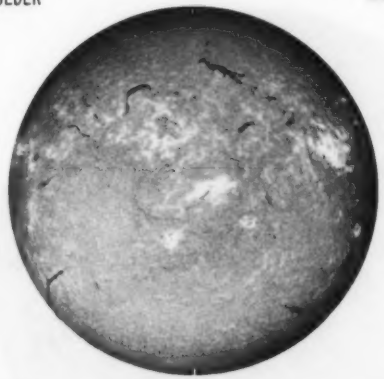
Sp

Sp

15

BOULDER

Np



E

W

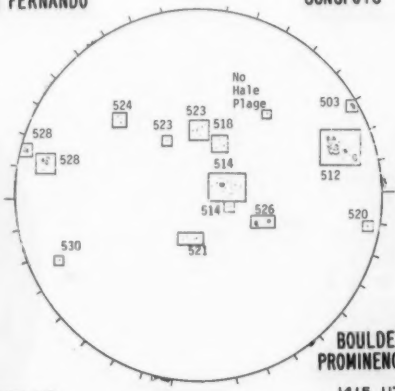
1415 UT

Sp

Ha

SAN FERNANDO

Np



E

W

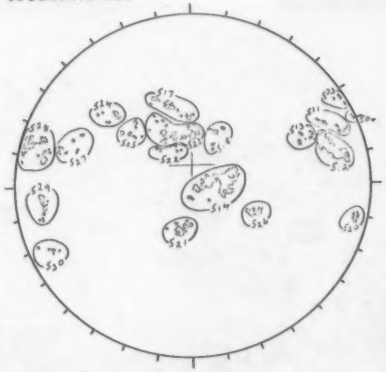
1810 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np



E

W

1850 UT

Sp

CALCIUM REPORT

GOOD	JA

03- 0300-2.5
04- 0200-2.5
11- 0500-2.5
12- 2500-3.5
13- 0300-3.0
14- 2600-4.0
17- 0700-3.0
18- 0300-3.0
20- 0300-3.0
21- 0500-3.5
22- 0200-2.5
23- 1300-3.0
24- 0300-3.0
25- 0400-3.0
26- 0400-3.0
27- 0300-2.5
28- 1300-3.0
29- 0600-2.5

BOULDER PROMINENCES

1415 UT

STANFORD

Np

NO DATA

E

W

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

••

Sp

87

Mar 81

MARCH 16, 1981 (P=-24.61, B_o=-7.14, L_o=259.89)

SACRAMENTO PEAK

Np

CORONA
5303 Å

E

NO DATA

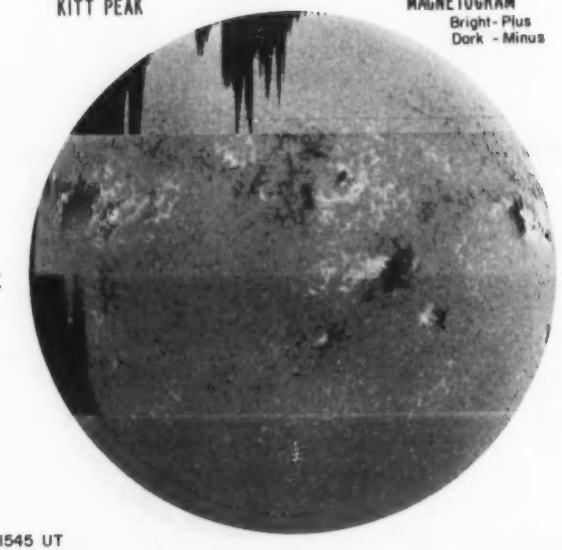
W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1545 UT

Sp

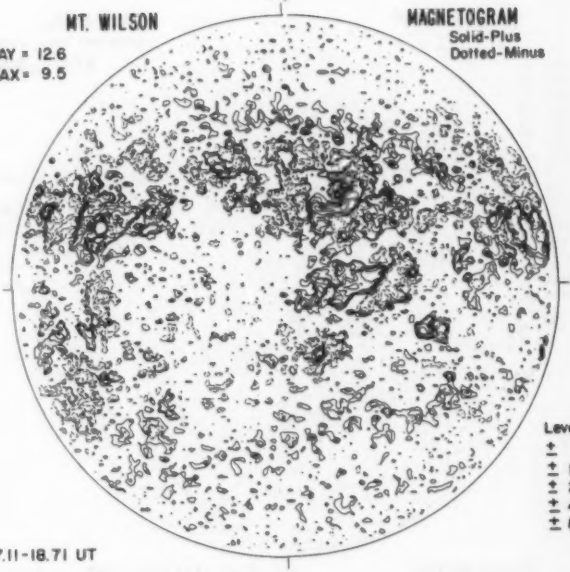
Sp

Np

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

MAGNETOGRAM
Solid-Plus
Dotted-Minus



E

W

Levels
± 5
± 10
± 20
± 40
± 80

17.11-18.71 UT

Sp

BOULDER

Np

Hα

E

W

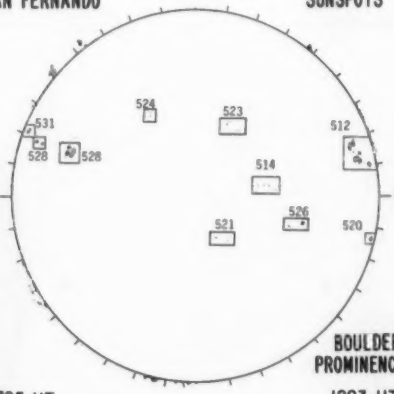
1803 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

1705 UT

Sp

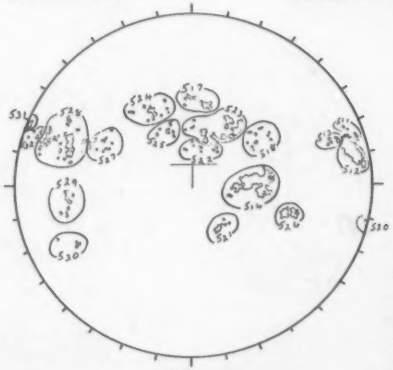
BOULDER PROMINENCES

1803 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

1755 UT

Sp

GOOD	JA

11- 0300-2.5
12- 3100-3.5
13- 0300-3.0
14- 2500-3.5
17- 0500-3.0
18- 0400-3.0
20- 0200-3.0
21- 0300-3.0
22- 0300-3.0
23- 1600-3.5
24- 0600-3.0
25- 0400-3.0
26- 0600-3.0
27- 0400-3.0
28- 2500-3.5
29- 0500-2.5
31- 0400-3.5
32- 0400-2.5

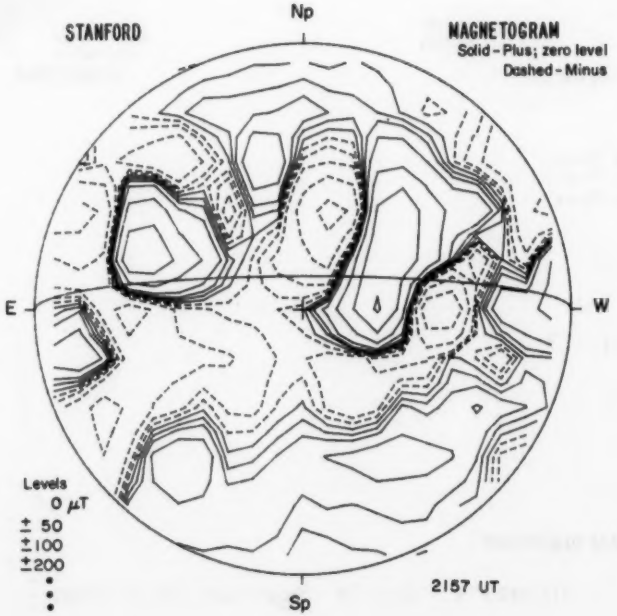
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

Sp

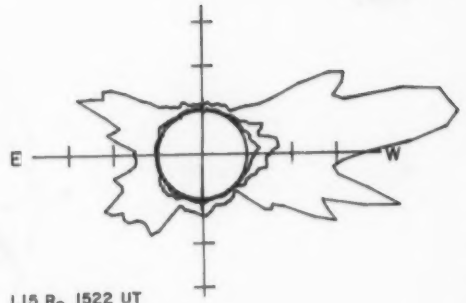
2157 UT

MARCH 17, 1981 (P=-24.76, B_o=-7.12, L_o=246.71)

SACRAMENTO PEAK

Np

CORONA
5303 Å



1.15 $R_\odot$ 1522 UT
1.35 $R_\odot$ 1502 UT
1.55 $R_\odot$ 1512 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

1457 UT

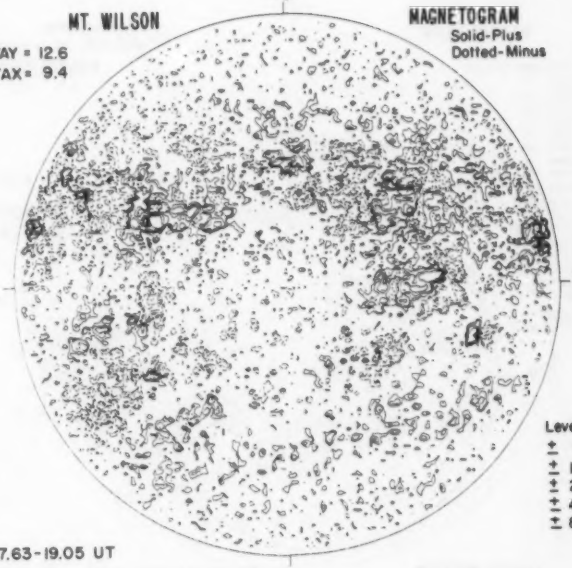
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.4



17.63-19.05 UT

Sp

Sp

17

BOULDER

Np

Hα

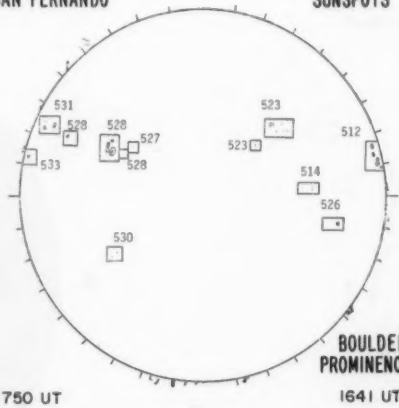
E W

1641 UT

Sp

SAN FERNANDO

Np



E W

1750 UT

Sp

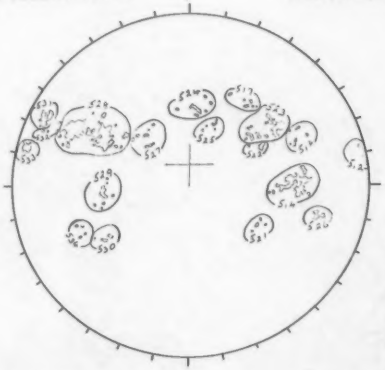
SUNSPOTS

BOULDER PROMINENCES

1641 UT

HALE OBSERVATORIES

Np



E W

2155 UT

Sp

CALCIUM REPORT

GOOD	JA

12- 0900-3.0
14- 1900-3.5
17- 0300-3.0
18- 0300-2.5
21- 0200-3.0
22- 0200-3.0
23- 1400-3.5
24- 0500-3.0
25- 0200-3.0
26- 0300-2.5
27- 0300-3.0
28- 4000-3.5
29- 0500-3.0
31- 0800-3.5
32- 0200-3.0
33- 0700-3.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

± 100

± 200

•

•

•

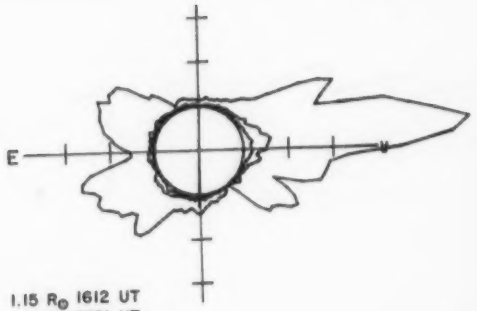
Sp

MARCH 18, 1981 (P=-24.91, B_o=-7.10, L_o=233.53)

SACRAMENTO PEAK

Np

CORONA
5303 Å



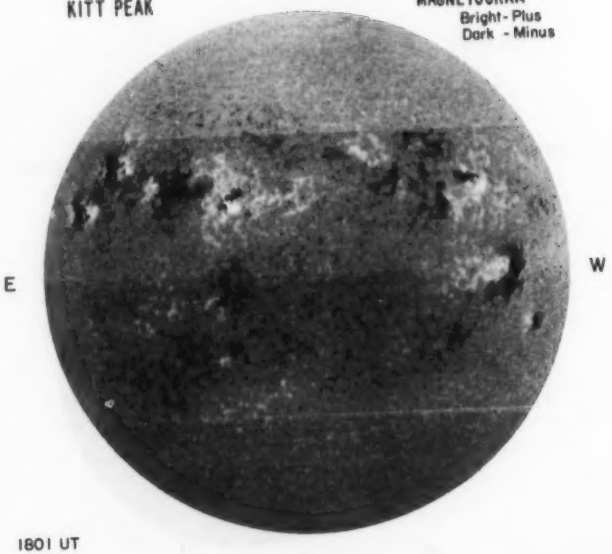
1.15 $R_\odot$ 1612 UT
1.35 $R_\odot$ 1551 UT
1.55 $R_\odot$ 1601 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1801 UT

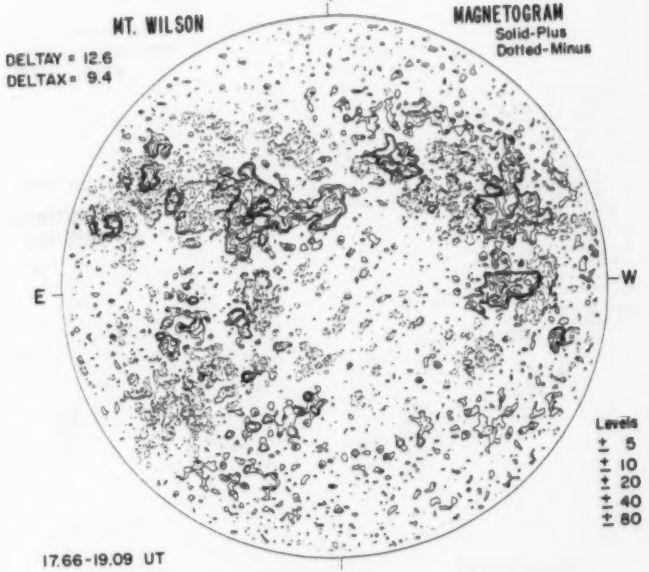
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



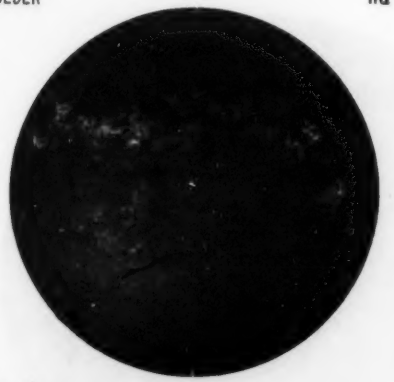
17.66-19.09 UT

Sp

Sp

BOULDER

Np



E W

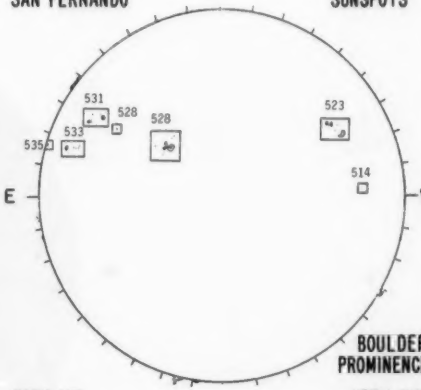
1753 UT

Sp

Hα

SAN FERNANDO

Np



E W

1735 UT

Sp

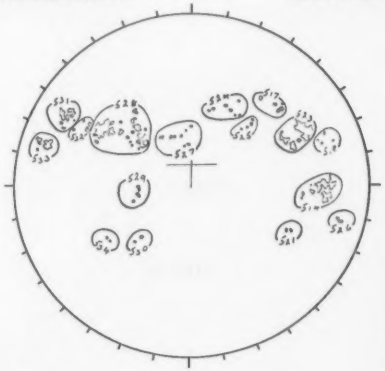
SUNSPOTS

BOULDER PROMINENCES

1753 UT

HALE OBSERVATORIES

Np



E W

1854 UT

Sp

CALCIUM REPORT

POOR	JA

14- 1600-3.0
17- 0200-3.0
23- 1700-3.5
24- 0300-3.0
25- 0200-3.0
26- 0200-3.0
27- 0300-3.0
28- 2500-4.5
29- 0300-2.5
30- 0100-2.5
31- 0700-3.0
32- 0200-2.5
33- 0600-3.5

STANFORD

Np

NO DATA

E W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

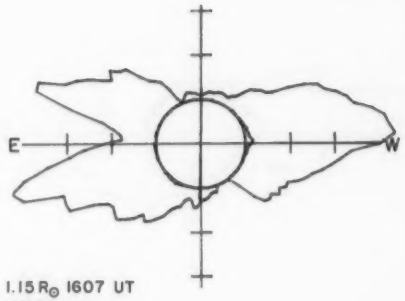
•

•

•

MARCH 19, 1981 (P=-25.05, B_o=-7.07, L_o=220.34)

SACRAMENTO PEAK Np CORONA 5303 Å

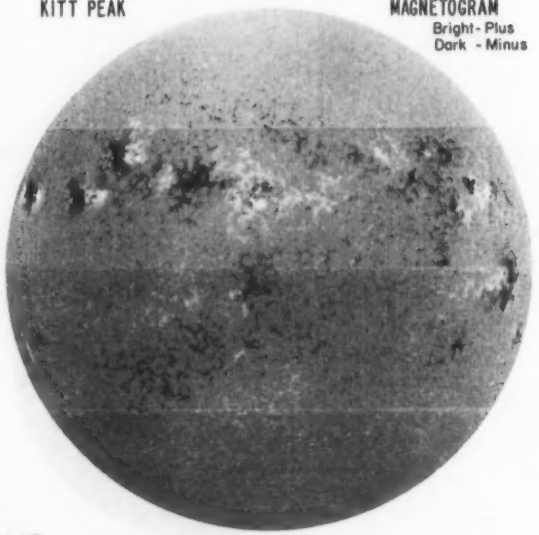


1.15 $R_\odot$ 1607 UT
1.35 $R_\odot$
1.55 $R_\odot$ 1556 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1844 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

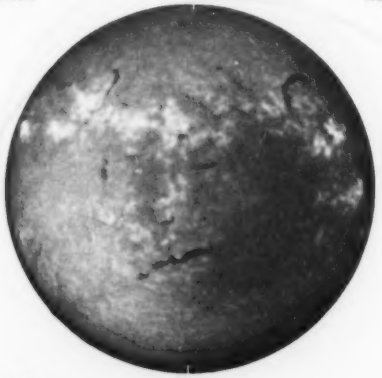
Levels
± 5
± ± 10
± ± 20
± ± 40
± 80

Sp

Sp

19

BOULDER Np Hα

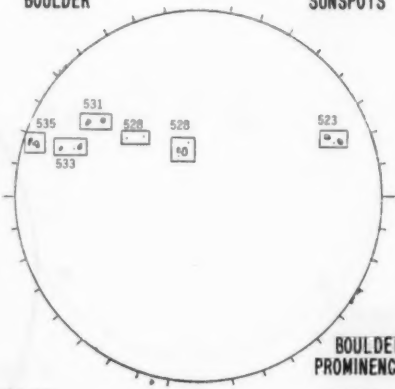


E W

1435 UT

Sp

BOULDER Np



E W

1425 UT

Sp

SUNSPOTS HALE OBSERVATORIES Np

NO DATA

E W

1435 UT

Sp

CALCIUM REPORT

BOULDER PROMINENCES

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

MARCH 20, 1981 (P=-25.18, B_o=-7.04, L_o=207.16)

SACRAMENTO PEAK Np CORONA 5303 Å

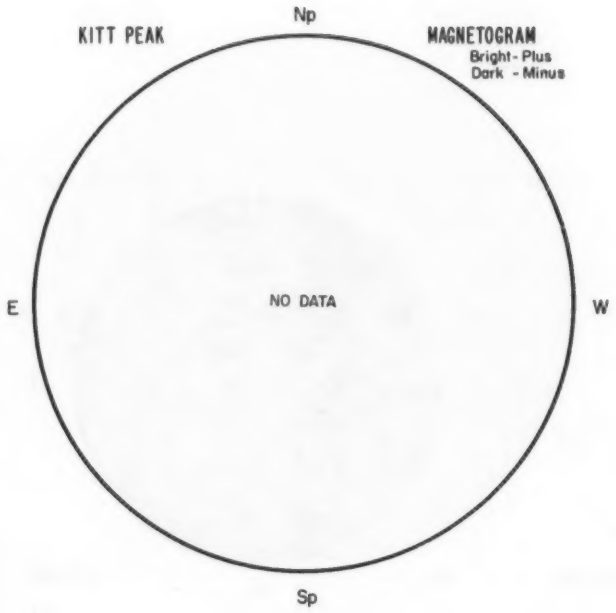
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Sp

Levels
± 5
± 10
± 20
± 40
± 80

20

BOULDER Np

SAN FERNANDO Np

20

BOULDER

Np

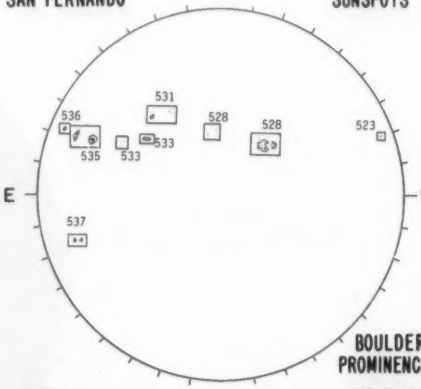
E NO DATA W

Sp

Hα

SAN FERNANDO

Np



E W

2340 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

NO DATA

Sp

CALCIUM REPORT

Np

E NO DATA W

Sp

STANFORD

Np

E NO DATA W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

97

Mar 81

MARCH 21, 1981 (P=-25.30, B_o=-7.01, L_o=193.98)

SACRAMENTO PEAK

Np

CORONA
5303 Å

E

NO DATA

W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

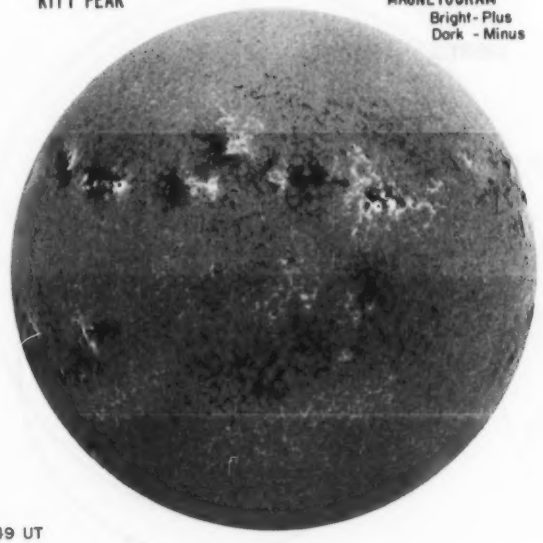
Sp

Np

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1549 UT

Sp

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

21

Np

Sp

21

BOULDER

Np

Hα

E

NO DATA

W

Sp

SAN FERNANDO

Np

E

NO DATA

W

(FIRST NO DATA FOR SAN FERNANDO SUNSPOT DRAWING SINCE MAY 31, 1980.)

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

E

NO DATA

W

BOULDER
PROMINENCES

Sp

CALCIUM REPORT

Np

E

NO DATA

W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

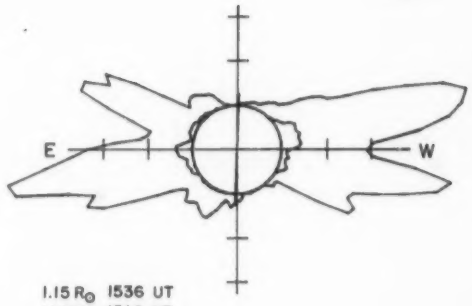
Sp

99

Mar 81

MARCH 22, 1981 (P=-25.42, B_o=-6.98, L_o=180.79)

SACRAMENTO PEAK Np CORONA
5303 Å

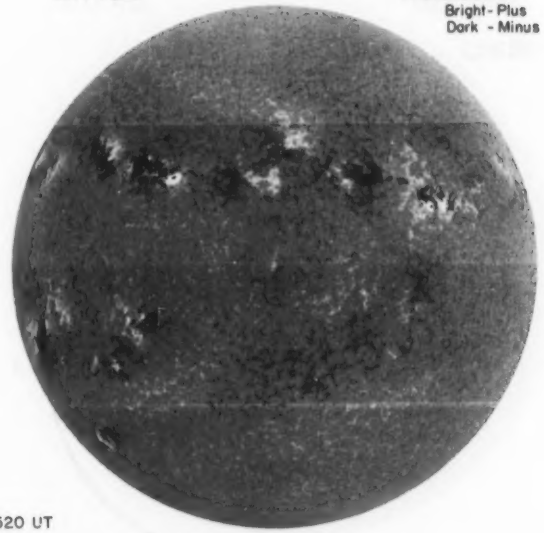


1.15 $R_\odot$ 1536 UT
1.35 $R_\odot$ 1516 UT
1.55 $R_\odot$ 1526 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1520 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

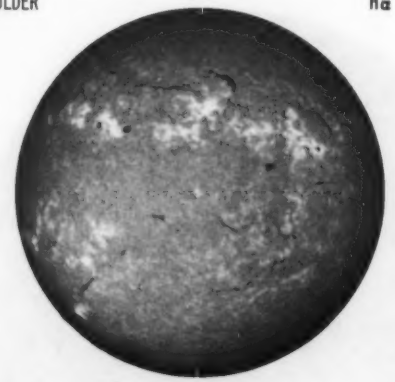
Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

Sp

BOULDER

Np

Hα



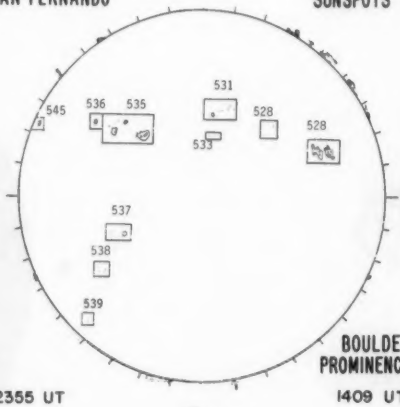
E W

1409 UT

Sp

SAN FERNANDO

Np



E W

2355 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

1409 UT

Sp

CALCIUM REPORT

Np

NO DATA

E W

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

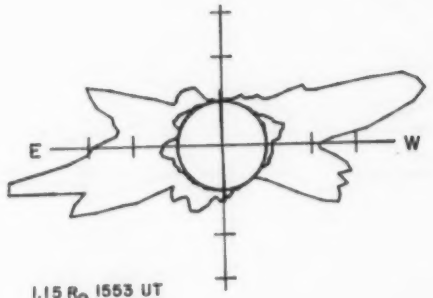
Sp

MARCH 23, 1981 (P=-25.53, B_o=-6.94, L_o=167.61)

SACRAMENTO PEAK

Np

CORONA
5303 Å



1.15 $R_\odot$ 1553 UT
1.35 $R_\odot$ 1532 UT
1.55 $R_\odot$ 1542 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

1510 UT

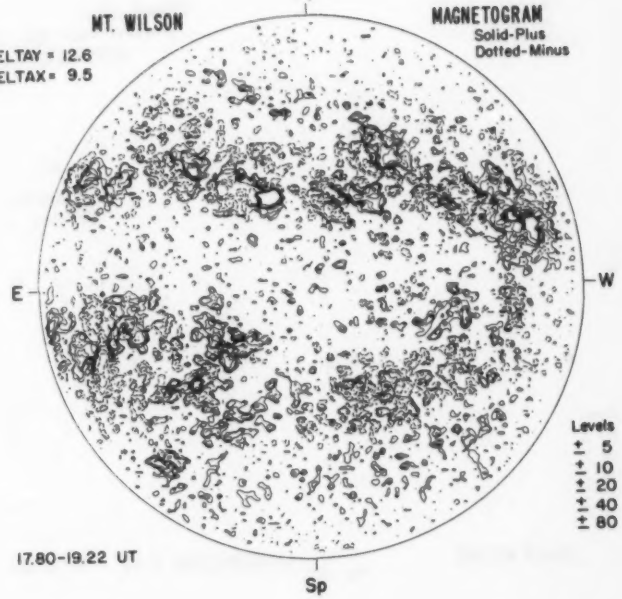
Sp

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus



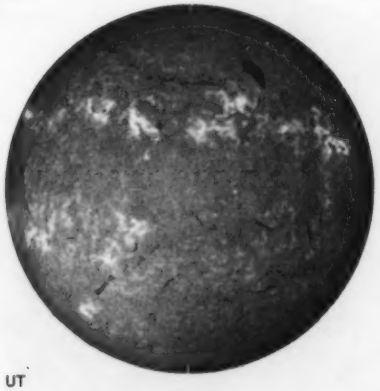
17.80-19.22 UT

Sp

BOULDER

Np

Hα



E W

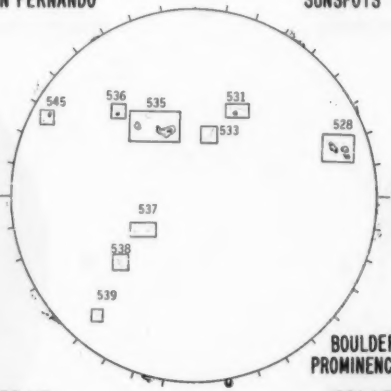
1501 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E W

1930 UT

Sp

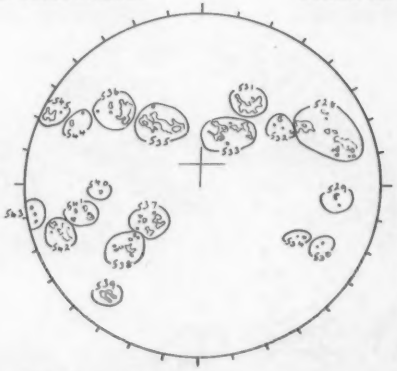
BOULDER PROMINENCES

1501 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

1904 UT

Sp

GOOD	JA
28- 2300-3.5	
31- 1100-3.0	
32- 0200-2.5	
33- 1200-3.0	
35- 1700-3.5	
36- 1100-3.5	
37- 0700-3.0	
38- 0500-3.0	
39- 0500-3.5	
41- 0300-2.5	
42- 1000-3.0	
43- 0300-2.5	
44- 0300-3.0	
45- 1000-3.0	

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

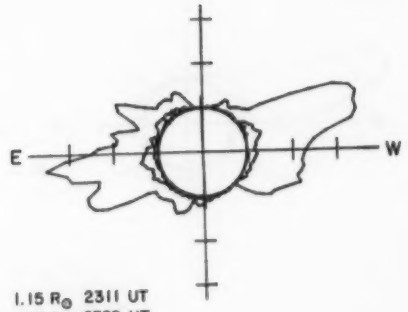
Sp

MARCH 24, 1981 (P=-25.63, B_o=-6.90, L_o=154.42)

SACRAMENTO PEAK

Np

CORONA
5303 Å



1.15 $R_\odot$ 2311 UT
1.35 $R_\odot$ 2320 UT
1.55 $R_\odot$ 2330 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright-Plus
Dark - Minus

1458 UT

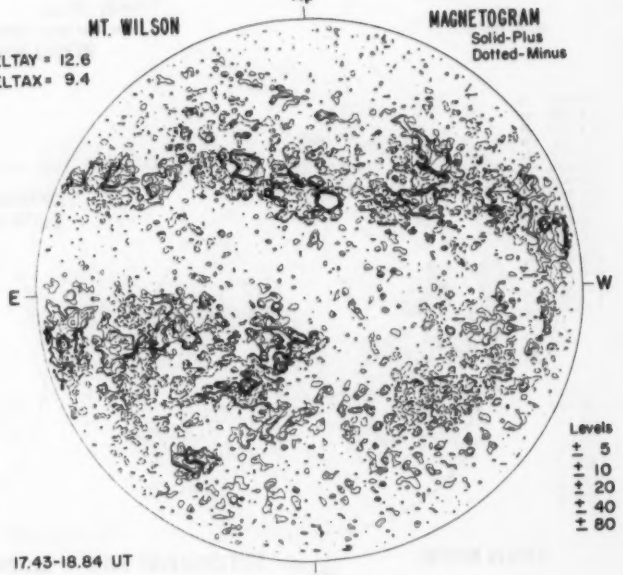
Sp

MT. WILSON

DELTAY = 12.6
DELTAX = 9.4

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus



17.43-18.84 UT

Sp

1458 UT

Sp

Sp

24

BOULDER

Np

Hα

E

NO DATA

W

Sp

SAN FERNANDO

Np

SUNSPOTS

545 536 535 531 533 528 548 537 538 539

E W

2220 UT

Sp

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

CALCIUM REPORT

E W

1832 UT

Sp

G000 JA

28- 2400-3.5
31- 1200-3.0
33- 1200-3.0
35- 2400-3.5
36- 1200-3.0
37- 0900-3.0
38- 0700-3.0
39- 0500-3.5
41- 0600-3.0
42- 1300-3.0
43- 0900-3.0
44- 0300-3.0
45- 1600-3.5
47- 0200-3.0
48- 0600-3.0

STANFORD

Np

E

NO DATA

W

Sp

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

Levels
0 μT
± 50
±100
±200
•
•
•

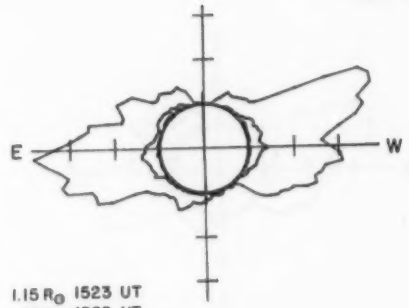
105
Mar 81

MARCH 25, 1981 (P=-25.73, B_o=-6.86, L_o=141.23)

SACRAMENTO PEAK

Np

CORONA
5303 Å



1.15 $R_\odot$ 1523 UT
1.35 $R_\odot$ 1502 UT
1.55 $R_\odot$ 1512 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

1502 UT

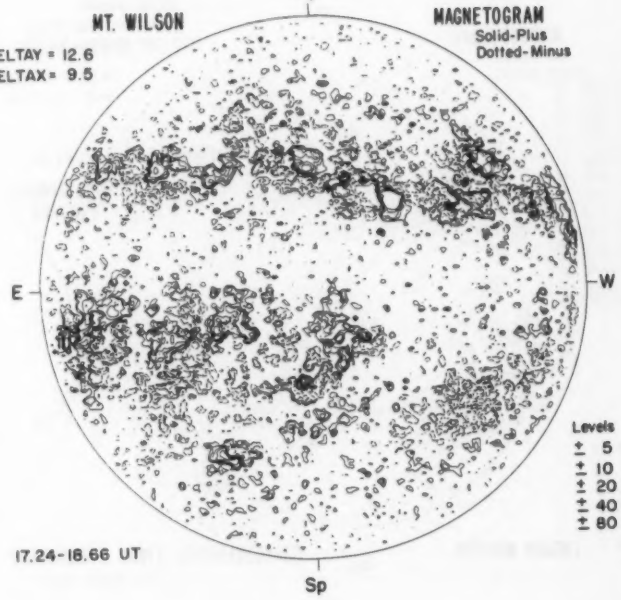
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5



17.24-18.66 UT

Sp

Sp

25

BOULDER

Np

E W

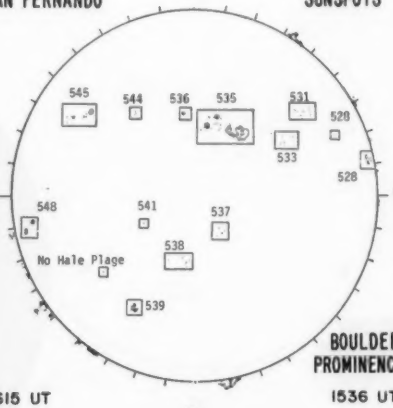
1534 UT

Sp

Hα

SAN FERNANDO

Np



E W

1615 UT

Sp

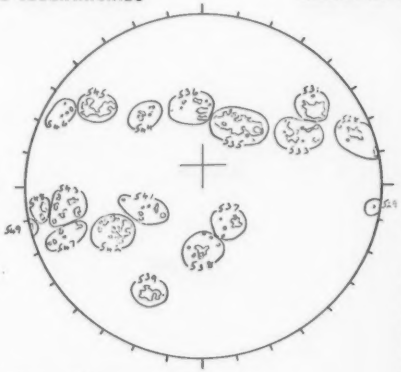
SUNSPOTS

BOULDER PROMINENCES

1536 UT

HALE OBSERVATORIES

Np



E W

1802 UT

Sp

CALCIUM REPORT

G000	JA
28-	1500-3.5
31-	2000-3.0
33-	1100-3.0
35-	3600-3.5
36-	0900-3.0
37-	0500-2.5
38-	0600-3.0
39-	1100-3.5
41-	0500-3.0
42-	1700-3.0
43-	1100-3.0
44-	0400-3.0
45-	2200-3.0
47-	0500-3.0
48-	0600-3.0
49-	0200-3.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

Sp

MARCH 26, 1981 (P=-25.81, B_o=-6.82, L_o=128.04)

SACRAMENTO PEAK

Np

CORONA
5303 Å

E

NO DATA

W

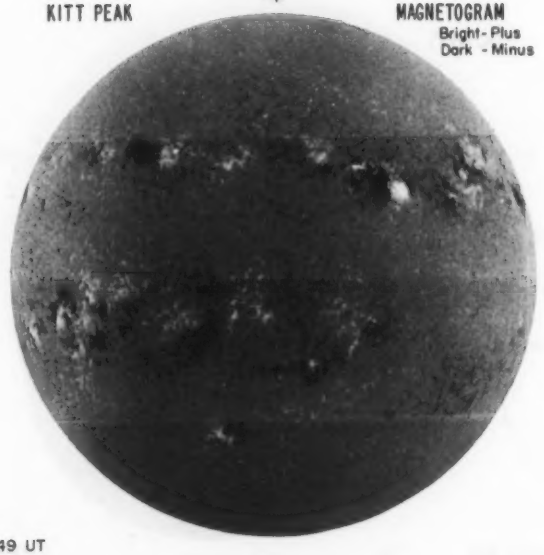
1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1449 UT

Sp

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

NO DATA

W

Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

Sp

Np

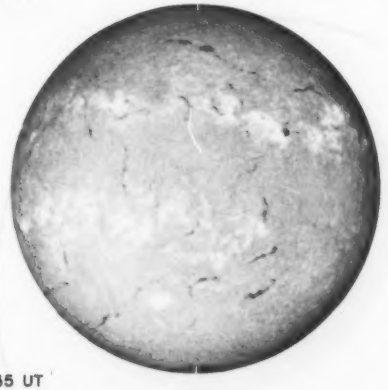
1449 UT

Sp

Sp

BOULDER

Np



E

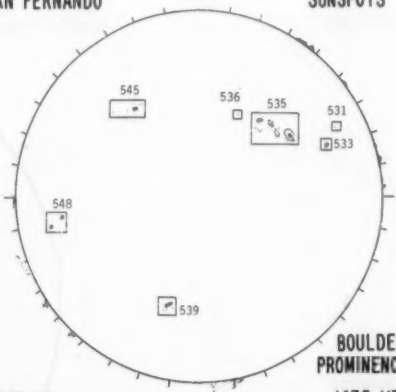
1435 UT

Sp

Hα

SAN FERNANDO

Np



W E

W E

1835 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

BOULDER PROMINENCES

1435 UT

Np

NO DATA

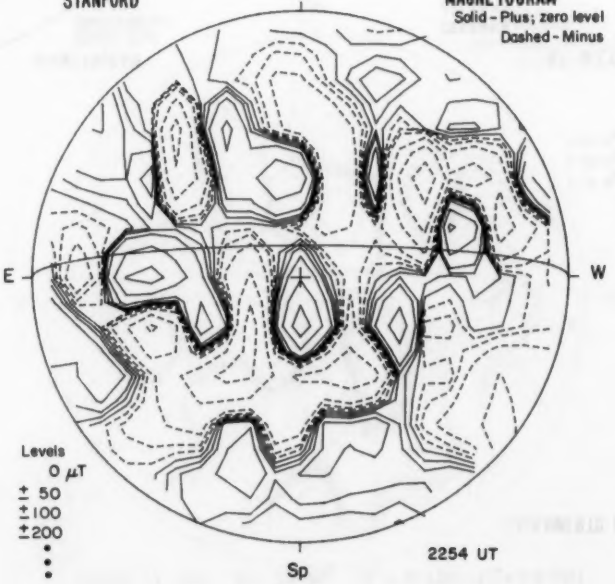
W

Sp

CALCIUM REPORT

STANFORD

Np



MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

W

2254 UT

Sp

MARCH 27, 1981 (P=-25.90, B_o=-6.78, L_o=114.86)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

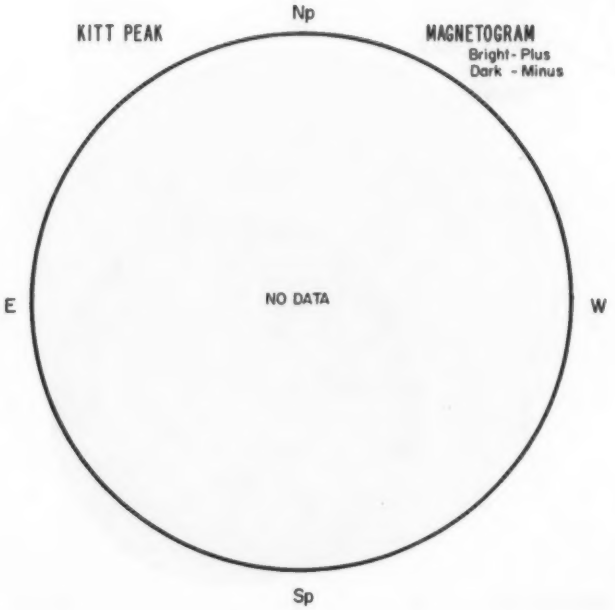
Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =



E NO DATA W

Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

Sp

Sp

Sp

27

BOULDER

Np

E W

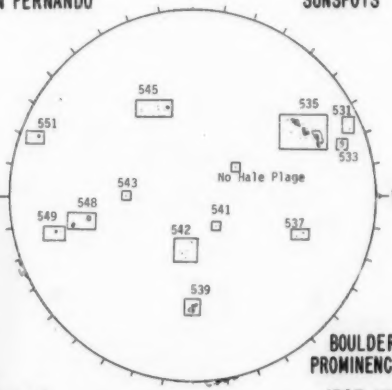
1527 UT

Sp

Hα

SAN FERNANDO

Np



E W

1850 UT

Sp

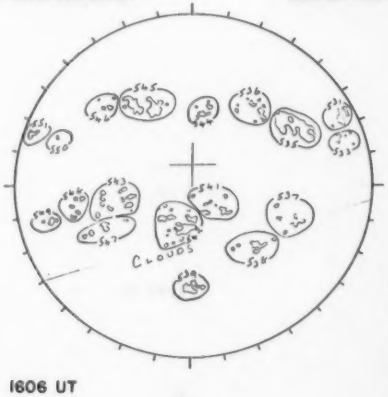
SUNSPOTS

BOULDER PROMINENCES

1527 UT

HALE OBSERVATORIES

Np



E W

1606 UT

Sp

CALCIUM REPORT

POOR	JA

31- 1100-3.0
33- 0400-3.0
35- 3100-3.5
36- 0700-3.0
37- 0600-3.0
38- 0800-3.0
39- 0800-3.5
41- 0600-3.0
42- 1500-3.0
43- 1000-3.0
44- 0400-3.0
45- 2000-3.5
46- 0300-3.0
47- 0500-3.0
48- 0500-3.0
49- 0400-3.0
50- 0100-2.5
51- 0500-3.0

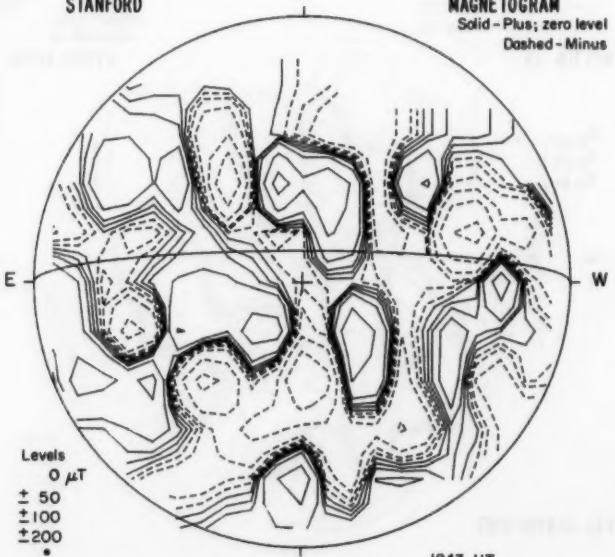
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

• • •

Sp

1843 UT

MARCH 28, 1981 (P=-25.97, B_o=-6.73, L_o=101.67)

SACRAMENTO PEAK Np CORONA 5303 Å

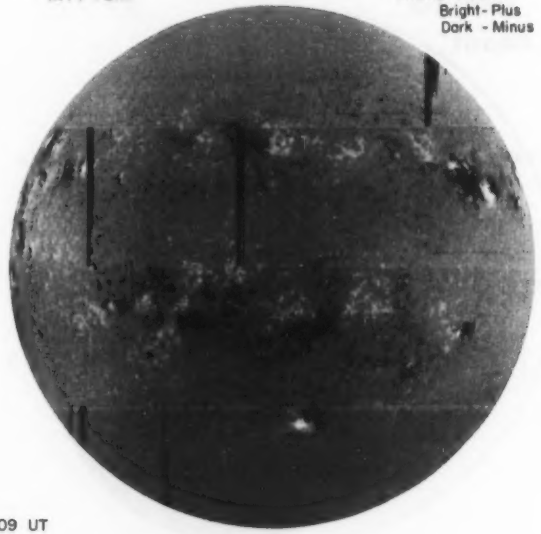
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



E W

1509 UT

Sp

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

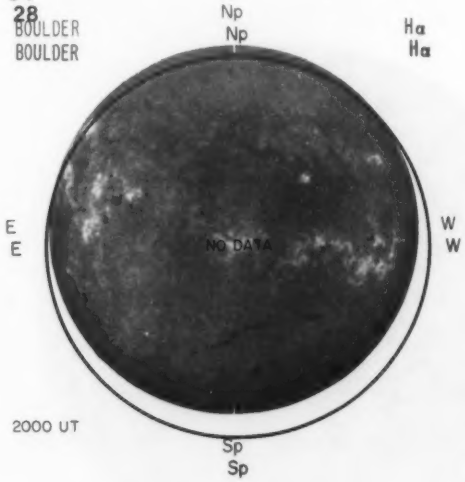
Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

Sp

04
28
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

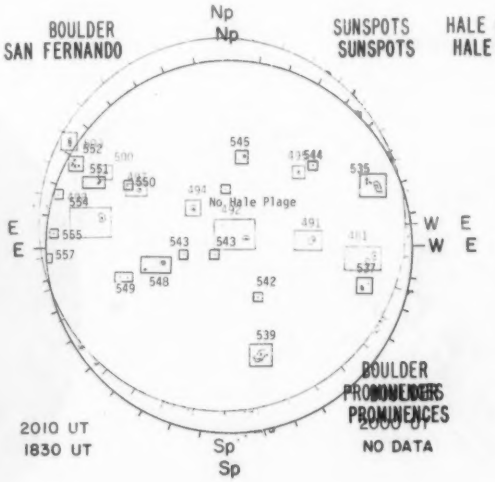
04
28

BOULDER
BOULDER



2000 UT

BOULDER
SAN FERNANDO



2010 UT
1830 UT

SUNSPOTS
SUNSPOTS

BOULDER
PROMINENCES
2000 UT
NO DATA

HALE OBSERVATORIES
HALE OBSERVATORIES

Np
Np

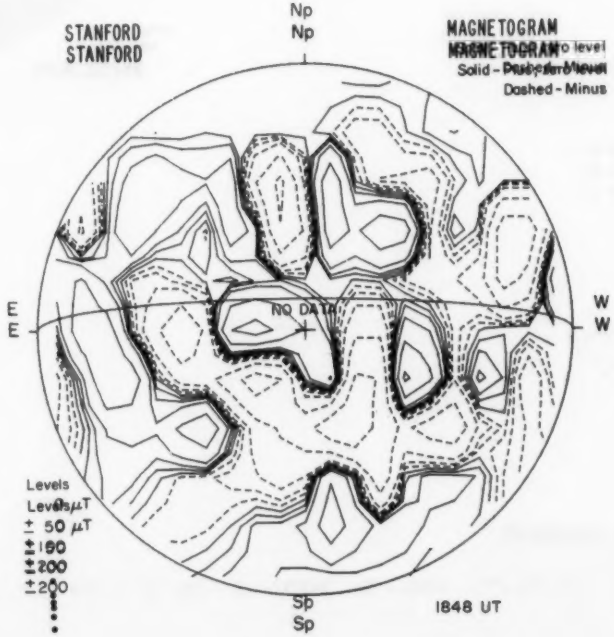
NO DATA
NO DATA

Sp
Sp

CALCIUM REPORT
CALCIUM REPORT

W
W

STANFORD
STANFORD



Levels
Levels μT
± 50 μT
±150
±200
±200

1848 UT

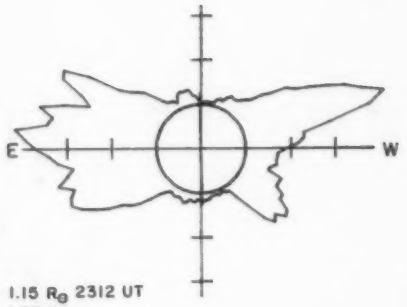
MAGNETOGRAM
MAGNETOGRAM
Solid - Plus, zero level
Dashed - Minus

MARCH 29, 1981 (P=-26.04, B_o=-6.68, L_o=88.48)

SACRAMENTO PEAK

Np

CORONA
5303 Å



1.15 $R_\odot$ 2312 UT
1.35 $R_\odot$
1.55 $R_\odot$

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

1444 UT

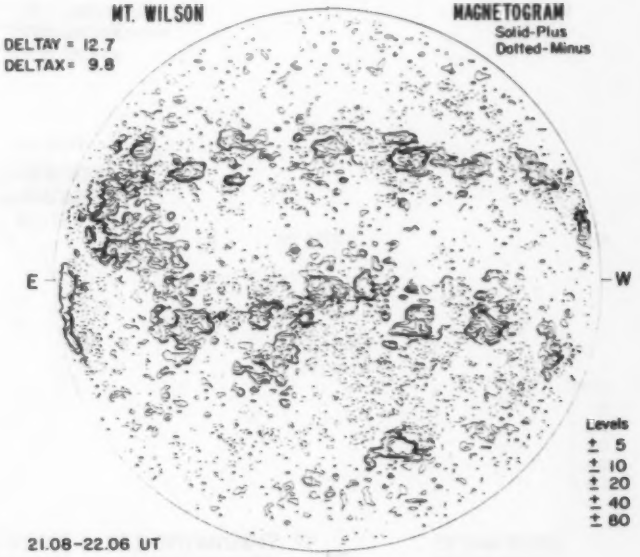
Sp

MT. WILSON

Np

DELTAY = 12.7
DELTAX = 9.8

MAGNETOGRAM
Solid-Plus
Dotted-Minus



21.08-22.06 UT

Sp

29

BOULDER

Np

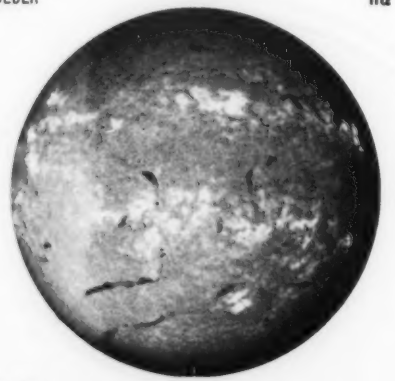
Np

Np

Sp

29

BOULDER Np Hα

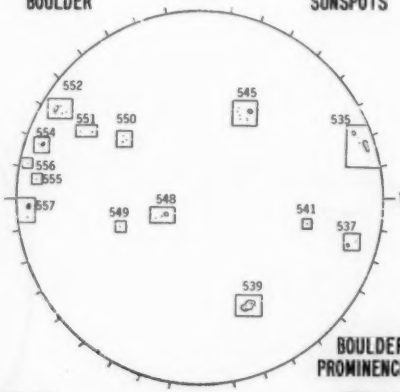


E W

1359 UT

Sp

BOULDER Np SUNSPOTS



E W

1415 UT

Sp

BOULDER PROMINENCES

1359 UT

HALE OBSERVATORIES Np

E W

1726 UT

Sp

CALCIUM REPORT

FAIR | JA

35- 1500-3.5
36- 0500-3.0
37- 0500-3.0
38- 0300-2.5
39- 0900-4.0
41- 0400-3.0
42- 1200-3.0
43- 0900-3.0
44- 0300-3.0
45- 2100-3.5
46- 0400-3.0
47- 0500-3.0
48- 0600-3.0
49- 0500-3.0
50- 0200-3.0
51- 0800-3.0
52- 0500-3.0
53- 0400-3.0
54- 0600-3.5
55- 0700-3.5
56- 0200-2.5
57- 0600-3.0
58- 0700-3.0

STANFORD Np

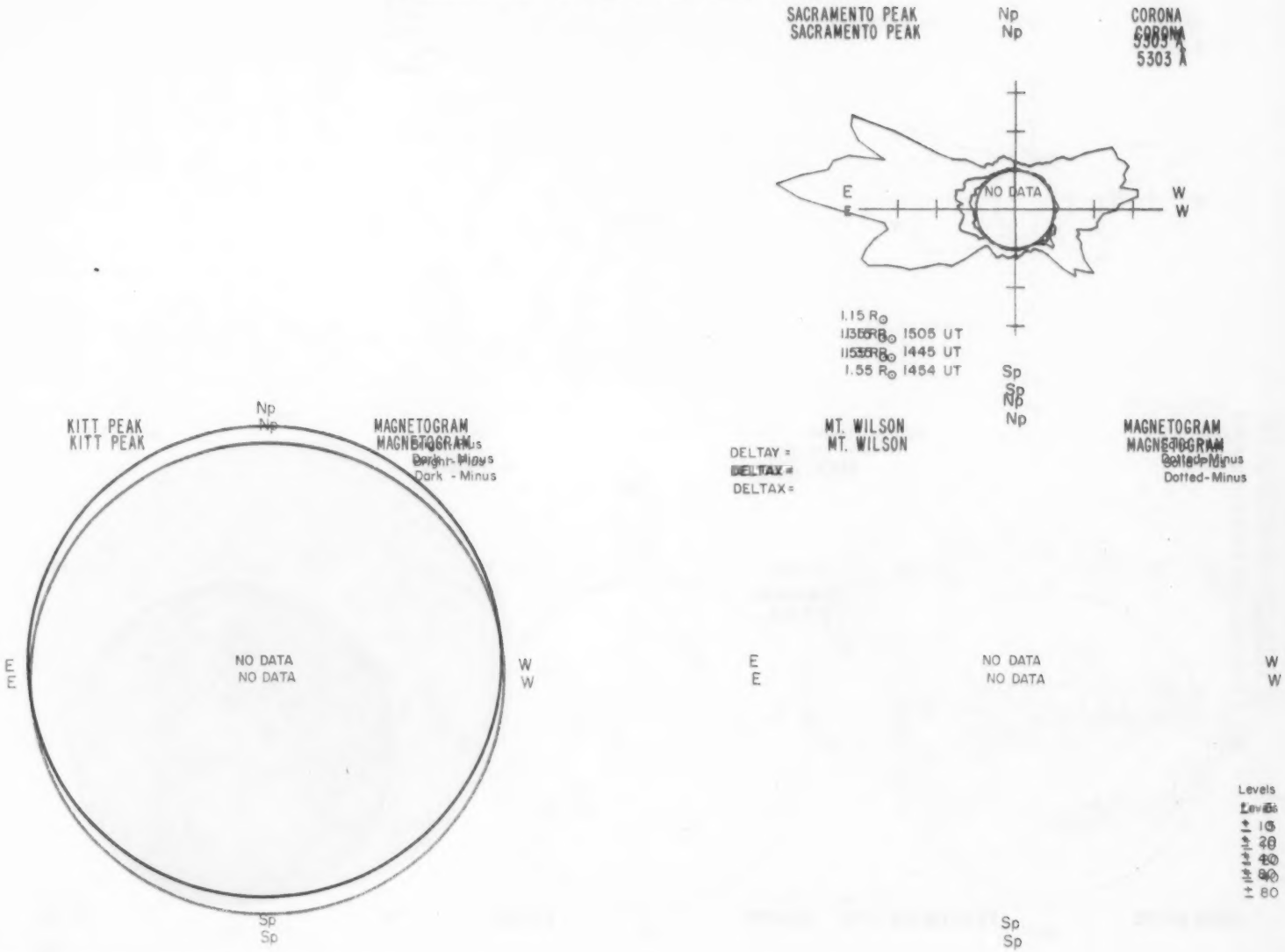
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E NO DATA W

Levels
0 μT
± 50
±100
±200

Sp

MARCH 6, 1981 (P=-22.73, B_o=-7.25, L_o=31.67)
MARCH 30, 1981 (P=-26.10, B_o=-6.64, L_o=75.29)



06

BOULDER Np Np Hα SAN FERNANDO Np Np SUNSPOTS HALE OBSERVATORIES Np

06

BOULDER

Np
Np

E

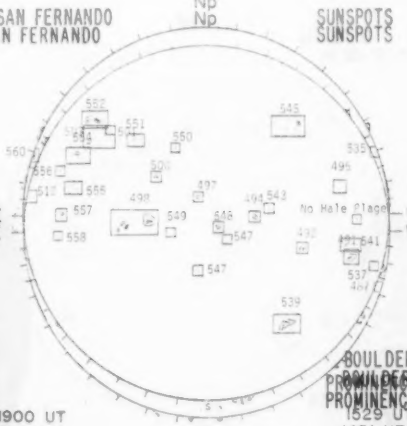
1451 UT

Sp
Sp

Ha
Ha

SAN FERNANDO
SAN FERNANDO

Np
Np



1900 UT
1740 UT

Sp
Sp

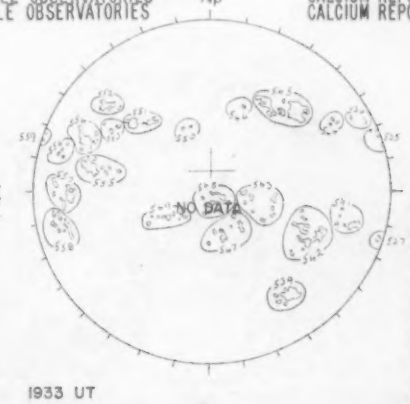
SUNSPOTS
SUNSPOTS

BOULDER
PROMINENCES
PROMINENCES

1529 UT
1451 UT

HALE OBSERVATORIES
HALE OBSERVATORIES

Np
Np



1933 UT

Sp
Sp

CALCIUM REPORT
CALCIUM REPORT

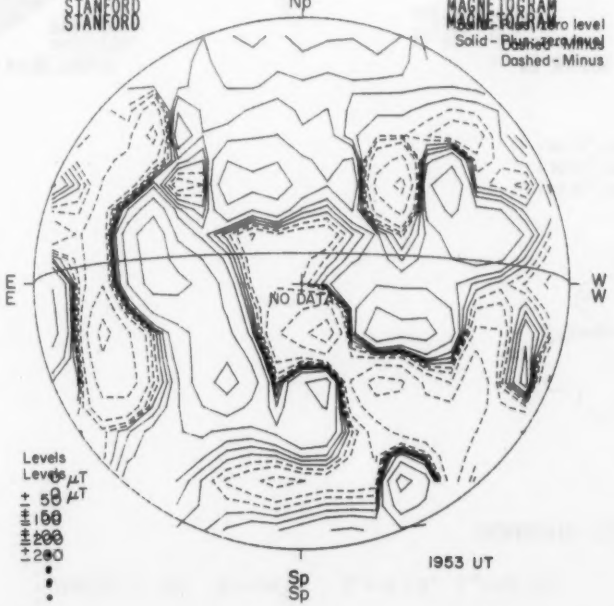
GOOD | JA

35- 0500-3.0
36- 0300-3.0
37- 0300-3.0
39- 1400-3.5
41- 0800-3.5
42- 1600-3.0
43- 0900-3.0
44- 0300-2.5
45- 3000-3.5
46- 0100-3.0
47- 0600-3.0
48- 0800-3.0
49- 0500-3.0
50- 0100-2.5
51- 0800-3.0
52- 0700-3.5
53- 0200-3.0
54- 1300-3.0
55- 1300-3.0
57- 1200-3.0
58- 1100-3.0

STANFORD
STANFORD

Np
Np

MAGNETOGRAM
MAGNETOGRAM
Solid - Plus, zero level
Dashed - Minus



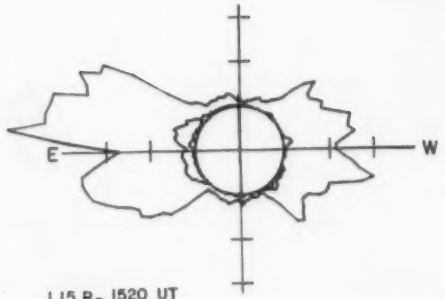
Sp
Sp

1953 UT

11769
Mar81

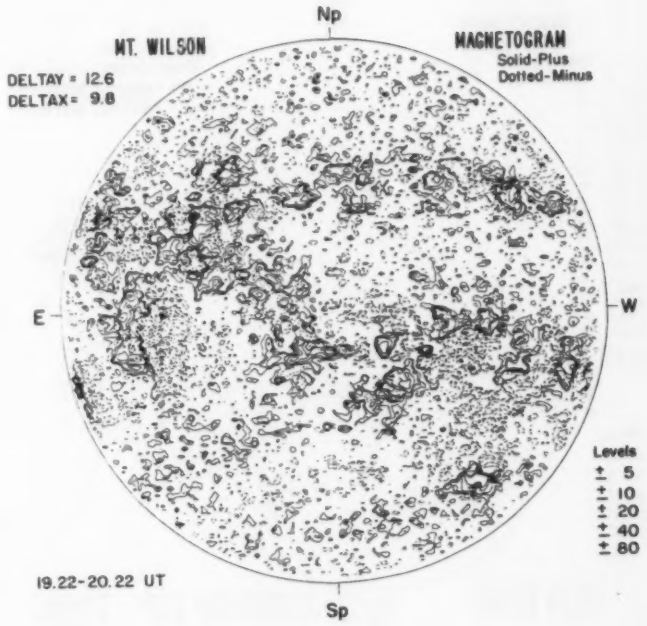
MARCH 31, 1981 (P=-26.15, B_o=-6.58, L_o=62.09)

SACRAMENTO PEAK



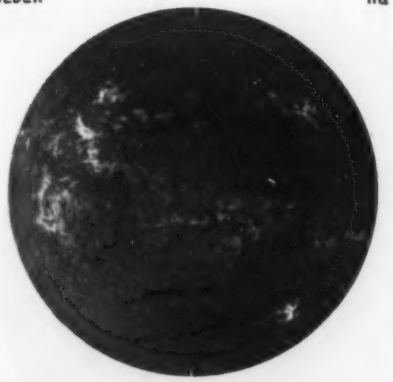
KITT PEAK

MT. WILSON



BOULDER

Np



E W

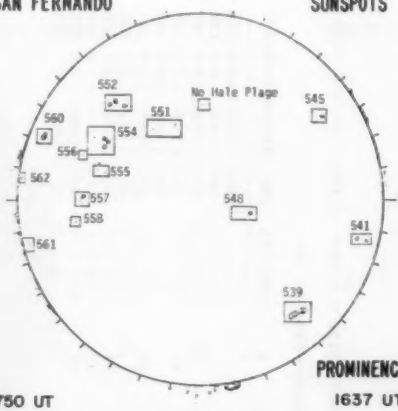
Sp

1637 UT

Hα

SAN FERNANDO

Np



E W

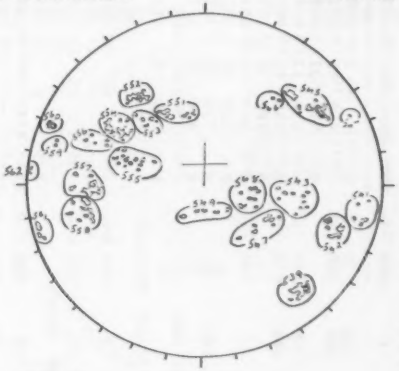
Sp

1750 UT

SUNSPOTS

HALE OBSERVATORIES

Np



E W

Sp

2208 UT

PROMINENCES

1637 UT

CALCIUM REPORT

FAIR | JA

39- 0900-4.0
41- 0500-3.0
42- 0800-3.0
43- 0500-3.0
45- 1400-3.0
46- 0200-2.5
47- 0500-3.0
48- 0500-3.0
49- 0300-3.0
51- 0500-3.0
52- 0500-3.5
53- 0300-3.0
54- 1000-3.5
55- 0600-3.0
57- 1100-3.0
58- 1000-3.0
60- 0400-2.5
61- 0500-3.0
62- 0200-3.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E NO DATA W

Levels
0 μT
± 50
± 100
± 200
•
•
•

Sp

12072
Mar 8 81

REGIONS OF SOLAR ACTIVITY

MARCH 1981

HALE REGION 17487

CMP DATE 1.1 RETURN OF LEADING EDGE OF REGION 17436 ROTATION 1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.
81	02	24	17487						22094
81	02	25	17487						22094
81	02	26	17487						
81	02	27	17487	S15	E11	94	600	3.0	22094
81	02	28	17487						
81	03	1	17487						
81	03	2	17487						
81	03	3	17487	S17	W37	95	1100	4.0	22094
81	03	4	17487						
81	03	5	17487	S17	W62	86	1000	3.5	
81	03	7	17487						

SUNSPOT DATA

LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
S17	E79	102	B	2	H		3	BXO
S16	E68	100	(BP)	4	H	460	15	EKI
S17	E40				B	570	32	EKI
S16	E26				B	510	12	EAI
S15	E15	100	(D)	5	B	1000	66	EKI
S14	E02				B	1000	34	FKI
S16	W12				H	540	34	EKI
S15	W26				B	870	23	EKO
S17	W39	102	BY	4	M	730	16	EKI
S15	W51				H	630	24	EKO
S18	W83				L	100	2	DKO

HALE REGION 17488

CMP DATE

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.
81	02	27	17488						
81	02	28	17488	N18	E31	81	300	3.0	
81	03	1	17488						

SUNSPOT DATA

LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
N16	E38				M	30	7	BXO
N16	E25				M	30	12	BXO
N16	E12				M	30	4	CRO

HALE REGION 17491

CMP DATE 2.8 NEW, IN LOCATION OF REAR 17436 & FRONT 17438

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.
81	02	25	17491						
81	02	26	17491						
81	02	27	17491	S14	E38	74	4300	3.5	22100
81	02	28	17491						
81	03	1	17491						
81	03	2	17491						
81	03	3	17491	S14	W15	73	5400	3.5	22100
81	03	4	17491						
81	03	5	17491	S14	W42	76	3900	4.0	
81	03	7	17491						
81	03	8	17491	S14	W76	69	600	3.0	22100

SUNSPOT DATA

LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
S13	E54				B	940	14	EKO
S13	E51				B	520	9	CKI
S10	E40	75	(D)	6	B	990	58	DKC
S13	E26				B	630	33	DKC
S12	E12				H	590	36	EKI
S12	W03				B	440	21	DKI
S12	W14	77	BY	5	M	340	12	DKI
S13	W25				H	410	23	DKC
S12	W68				H	200	7	CKO
S12	W82	78	X	2	H	230	4	DKC

HALE REGION 17495

CMP DATE 3.0

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.
81	03	3	17495	N07	W13	71	100	2.5	
81	03	4	17495						
81	03	5	17495	N08	W36	78	400	3.0	
81	03	8	17495	N08	W78	71	100	2.5	

SUNSPOT DATA

LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
N09	W22				H	100	5	DSO

HALE REGION 17490

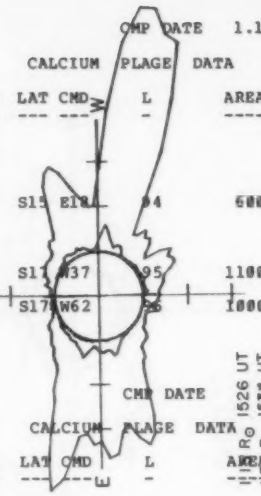
CMP DATE 3.2

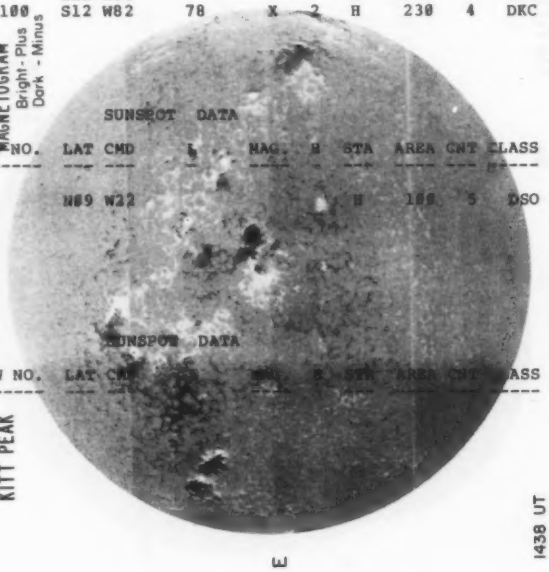
CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.
81	03	27	17490	N14	E44	68	200	2.5	

SUNSPOT DATA

LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS





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HALE REGION 17489

CMP DATE 1.8 — RETURN OF REGION 17440 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	02	26	17489					
81	02	27	17489	N20	E27	85	400	3.0
81	02	28	17489					
81	03	3	17489	N21	W02	60	400	3.0
81	03	5	17489	N22	W24	58	500	3.0
81	03	7	17489					
81	03	8	17489	N22	W68	61	100	2.0

SUNSPOT DATA

LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
N16	E38				H	30	7	BXO
N16	E25				H	30	12	BXO
N16	E12				H	30	4	CRO
N22	W65				H	10	2	AXX

HALE REGION 17492

CMP DATE 4.3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	02	27	17492	S13	E65	47	1100	3.5
81	03	1	17492					
81	03	2	17492					
81	03	3	17492	S13	E05	53	1000	3.5
81	03	4	17492					
81	03	5	17492	S13	W18	52	800	3.0
81	03	7	17492					
81	03	8	17492	S13	W63	56	400	3.0

SUNSPOT DATA

LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
S14	E66				B	120	7	DAO
S12	E36				H	110	15	DAO
S12	E23				B	150	20	CAC
S13	W03				H	200	13	CSO
S12	W46				H	100	2	DAI
S12	W59				H	150	2	DSO

HALE REGION 17493

CMP DATE 4.8

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	02	27	17493					
81	03	1	17493					
81	03	2	17493					
81	03	3	17493	S14	E14	44	1600	3.5
81	03	4	17493					
81	03	5	17493	S14	W14	48	1000	3.5
81	03	7	17493					
81	03	8	17493	S13	W53	46	600	3.5
81	03	9	17493	S13	W67	48	800	3.0
81	03	10	17493	S13	W79	48	400	3.0

SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22101	S09	W68	42	BG	3	B	120	7	DAO
	S12	E36				H	110	15	DAO
	S12	E23				B	150	20	CAC
22101	S12	E11	52	BG	5	H	170	11	CAI
	S13	W03				H	200	13	CSO
	S12	W46				H	100	2	DAI
22101	S11	W59	55	(AP)	4	H	150	2	DSO
22101	S12	W73	57	(AP)	3	B	80	3	CSO
22101	S11	W88	58	AC	1	H	100	1	HSX

HALE REGION 17496

CMP DATE 5.3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	3	17496	N22	E11	40	400	2.5

SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 17494

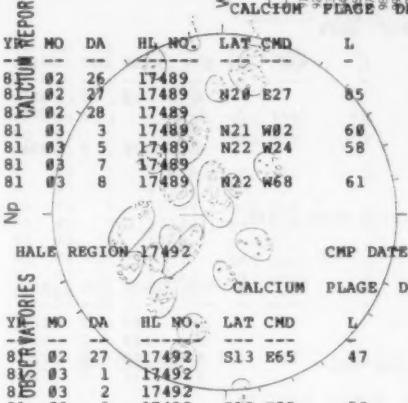
CMP DATE 5.6

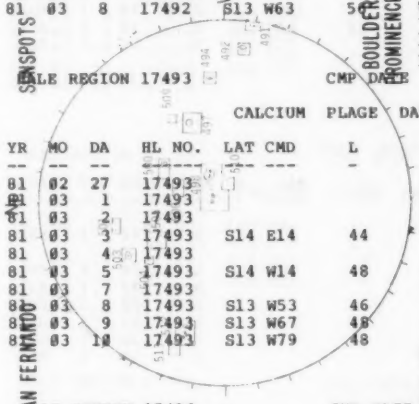
CALCIUM PLAGE DATA

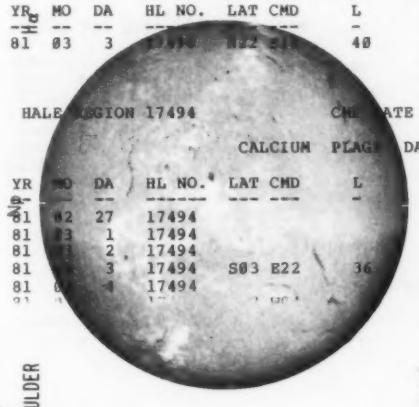
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	02	27	17494					
81	03	1	17494					
81	03	2	17494					
81	03	3	17494	S03	E22	36	400	2.5
81	03	4	17494				300	2.5

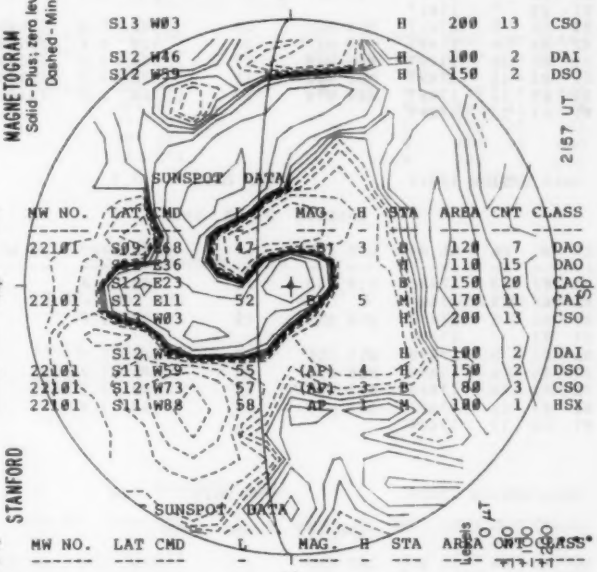
SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22102	N02	E80	35	AP	2	B	100	2	HSX
	S03	E52				H	100	1	HSX
	S03	E36				B	140	1	HSX
	S03	E26	37	BP	4	H	100	1	HSX
	S03	E13				H	150	4	CSO









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HALE REGION 17489 CMP DATE 6.5

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	7	17489						N09 W17				H	10	3	BXO
81	03	8	17489	N08 W32	25	200	3.0	22110	N10 W28	24	(AP)	3	L		2	BXO
81	03	9	17489	N10 W43	24	100	2.5									
81	03	10	17489	N09 W55	24	100	2.5		N04 W50				B	70	2	HAX

HALE REGION 17497 CMP DATE 6.9 NEW, IN LOCATION OF LEADING EDGE 17448

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	1	17497						N03 E70				H	60	2	CSO
81	03	2	17497						N03 E55				B	100	2	CSO
81	03	3	17497	N05 E44	14	1300	4.0	22105	N04 E46	17	BF	4	M	100	2	CSO
81	03	4	17497						N04 E32				H	110	3	CSO
81	03	5	17497	N05 E17	17	1000	4.5									
81	03	7	17497						N03 W10				H	100	6	CSO
81	03	8	17497	N04 W26	19	600	3.0	22105	N03 W26	22	(AP)	5	H	90	2	CSO
81	03	9	17497	N04 W37	18	600	3.0	22105	N03 W38	22	(AP)	4	B	100	4	CSO
81	03	10	17497	N05 W48	17	500	3.0	22105	N02 W52	22	(AP)	4	B	70	2	HAX
81	03	11	17497	N06 W60	15	200	2.5	22105	N02 W66	23	(AP)	4	H	70	1	HAX
81	03	12	17497	N06 W70	12	100	2.0	22105	N02 W80	24	AP	1	B	20	1	AXX
81	03	13	17497						N11 W89				H	10	1	AXX

HALE REGION 17499 CMP DATE 7.5

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	3	17499	N15 E45	13	400	3.0									
81	03	4	17499						N11 E40				B	40	1	HSX
81	03	5	17499	N16 E22	12	300	3.0									
81	03	7	17499						N10 W08				L	10	6	BXO
81	03	8	17499	N15 W19	12	200	2.5		N12 W11				H	90	1	HSX
81	03	9	17499	N16 W31	12	200	3.0		N11 W25				B	100	1	HSX
81	03	10	17499	N15 W44	13	200	2.5		N11 W38				B	110	1	HSX
81	03	11	17499	N15 W59	14	100	2.5		N10 W53				H	120	1	HSX
81	03	13	17499						N11 W89				H	10	1	AXX

HALE REGION 17486 CMP DATE 7.8

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	02	25	17486						S06 E29				B	30	3	BXO
81	02	26	17486						S06 E15				B	40	4	CSO
81	02	27	17486	S07 E02	110	500	3.0	22098	S07 E02	113	(B)	4	B	180	10	DAO
81	02	28	17486													
81	03	1	17486						S08 W23				H	50	7	DAO
81	03	2	17486						S05 W37				B	20	2	CSO
81	03	3	17486	S08 W54	112	700	3.0		S07 W45				L	10	2	AXX
81	03	5	17486	S08 W75	109	300	3.0									

HALE REGION 17507 CMP DATE 7.8

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	5	17507	S17 E27	7	100	2.5									
81	03	8	17507	S19 W15	8	200	2.0									
81	03	9	17507	S19 W27	8	200	2.0									
81	03	10	17507	S20 W37	6	100	2.0		S20 W28				P	30	5	CSO
81	03	11	17507	S18 W51	6	100	2.0									

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HALE REGION 17500 CMP DATE 8.2 RETURN OF NORTH PART OF REGION 17448 ROTATIONS 3 AND 5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	1	17500						N05 E77				L	100	1	HSX
81	03	2	17500						N08 E67				B	50	1	HSX
81	03	3	17500	N08 E58	0	900	4.0	22108	N05 E63		X	2	M	100	3	CSO
81	03	3	17500	N08 E58	0	900	4.0	22106	N09 E59	4	BP	3	M	100	3	CSO
81	03	4	17500						N10 E44				H	100	2	HAX
81	03	5	17500	N08 E32	2	1000	3.5									
81	03	7	17500						N12 E02				H	90	2	CAO
81	03	8	17500	N08 W10	3	700	3.0	22106	N11 W12	8	(AP)	5	H	90	1	HSX
81	03	9	17500	N07 W19	0	600	3.0	22106	N11 W26	10	(AP)	5	B	100	1	HSX
81	03	10	17500	N06 W33	2	400	3.0	22106	N11 W39	9	(AP)	4	B	110	1	HSX
81	03	11	17500	N07 W48	3	400	3.0	22106	N11 W53	10	(AP)	5	H	120	1	HSX
81	03	12	17500	N07 W58	0	300	3.0	22106	N11 W68	12	(AP)	4	H	50	1	HAX
81	03	13	17500						N12 W79				B	20	1	HSX

HALE REGION 17510 CMP DATE 8.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	7	17510						S09 E09				H		1	AXX
81	03	8	17510	S08 W08	1	100	3.0	22111	S09 W06	2	(B)	3	H	10	4	BXO
81	03	9	17510	S08 W20	1	100	3.0		S04 W17				B	540	41	EKI
81	03	10	17510	S08 W34	3	100	3.0		S04 W34				P	470	16	EKI
81	03	11	17510	S08 W47	2	100	3.0		S05 W47				H	390	14	EKO
81	03	13	17510						S03 W76				H	240	3	DKC

HALE REGION 17519 CMP DATE 8.4

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	11	17519	S13 W45	0	100	2.0									
81	03	12	17519	S13 W59	1	200	3.0	22123	S14 W56		(AF)	2	P	30	3	BXO
81	03	13	17519						S13 W70				H	20	10	CAO
81	03	14	17519					22123	S15 W81	359	(AF)	3	H	60	1	HRX

HALE REGION 17498 CMP DATE 8.5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	2	17498						S05 E70				B	200	1	HAX
81	03	3	17498	S04 E60	358	2700	4.0	22107	S03 E65	358	BY	4	M	490	10	EAO
81	03	4	17498						S05 E45				H	730	24	EKI
81	03	5	17498	S04 E36	358	3100	4.5									
81	03	7	17498						S04 E10				H	490	27	EKI
81	03	8	17498	S04 W05	358	1900	4.0	22107	S04 W05	1	(BY)	5	H	520	29	EHI
81	03	9	17498	S04 W17	358	1600	3.5	22107	S03 W19	3	(BP)	5	B	540	41	EKI
81	03	10	17498	S04 W31	0	2400	3.5	22107	S03 W34	4	(BY)	5	B	360	14	CKI
81	03	11	17498	S04 W43	358	1500	3.0	22107	S03 W47	4	(BY)	5	H	390	14	EKO
81	03	12	17498	S04 W59	1	1900	3.0	22107	S03 W64	8	(AP)	4	H	200	4	DHC
81	03	13	17498						S03 W76				H	240	3	DKC

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HALE REGION 17515 CMP DATE 8.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	1	17515	S20	W27	356	200	3.0
81	03	2	17515	S19	W41	356	100	3.0
81	03	12	17515	S19	W54	356	100	2.0
81	03	13	17515					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21	E20					P	30	5	CSO
19	S20					L	10	4	CRO
	S14					P	30	3	BXO
	S14					M	150	8	DAI

HALE REGION 17501 CMP DATE 9.4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	3	17501	N27	E68	350	1300	4.0
81	03	4	17501					
81	03	5	17501	N27	E45	349	1600	4.5
81	03		17501					
81	03		17501					
81	03		17501	N28	E07	346	1400	3.5
81	03		17501	N28	W05	346	1500	3.0
81	03		17501	N28	W18	347	1200	3.0
81	03		17501	N28	W33	348	1300	3.0
81	03		17501	N28	W42	344	1100	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N28	E20				H	10	2	AXX
12	N28	E08				H	10	3	BXO
	N28	W01				H	10	5	BXO
	N24	W09				B	130	1	HHX
	N25	W24				H	140	3	CSO
	N25	W37				H	130	1	HSX

HALE REGION 17505 CMP DATE 9.5 RETURN OF EXTREME NORTH OF REGION 17454 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	4	17505					
81	03	5	17505	N13	E50	344	1200	4.0
81	03	7	17505					
81	03	8	17505	N13	E08	345	400	3.0
81	03	9	17505	N13	W04	345	400	3.0
81	03	10	17505	N13	W15	344	400	3.0
81	03	11	17505	N14	W31	346	300	3.0
81	03	12	17505	N13	W43	345	200	3.0
81	03	13	17505					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N13	E65				H	40	5	CRO
	N16	E25				H	10	4	BXO
	N17	E18				P	10	1	AXX
	N18	W50				M	10	5	BXO

HALE REGION 17502 CMP DATE 9.6 RETURN OF FRONT HALF OF REGION 17454 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	3	17502	N11	E78	340	1300	3.5
81	03	4	17502					
81	03	5	17502	N10	E58	336	2700	4.0
81	03	8	17502	N08	E10	343	800	3.0
81	03	9	17502	N08	W03	344	800	3.0
81	03	10	17502	N08	W15	344	800	3.0
81	03	11	17502	N07	W30	345	600	3.0
81	03	12	17502	N08	W42	344	500	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N08	E69				M	100	3	CSO
	N13	E65				H	40	5	CRO

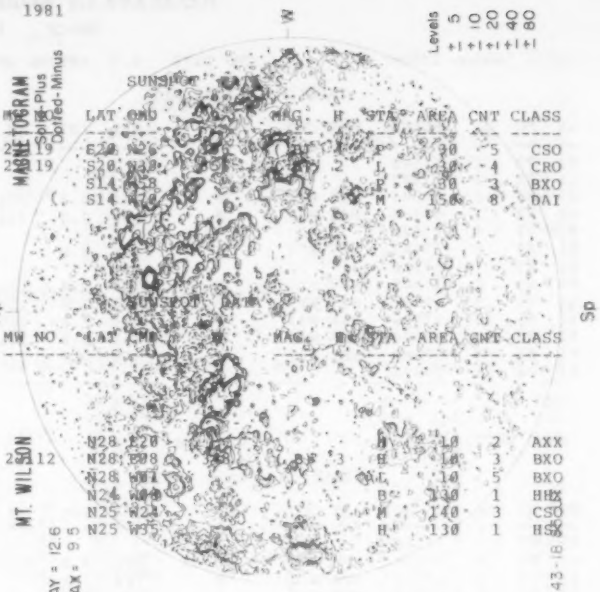
HALE REGION 17508 CMP DATE 9.6 RETURN OF REGION 17457 ROTATION 3

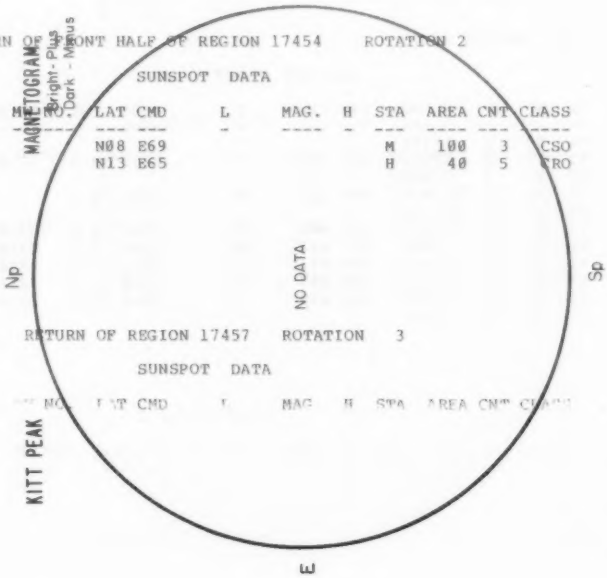
CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS





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CALCIUM REPORT

HALE REGION 17504 CMP DATE 10.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	4	17504					
81	03	5	17504	N17	E58	336	700	3.0
81	03	7	17504					
81	03	8	17504	N17	E15	338	300	3.0
81	03	9	17504	N17	E04	337	300	2.5
81	03	10	17504	N17	W09	338	200	3.0
81	03	11	17504	N20	W24	339	100	2.5
81	03	12	17504	N20	W36	338	100	3.0
81	03	13	17504					
81	03	14	17504					
81	03	15	17504	N21	W75	338	200	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N16	E25				H	10	4	BXO
22114	N18	E19	337	(AP)	3	H		1	AXX
	N19	E14				L	10	1	AXX
	N24	W20				H	150	2	HSX
22126	N20	W63	341	(B)	3	H	20	2	BXO
22126	N20	W85	349	AP	1				

HALE OBSERVATORIES

HALE REGION 17503 CMP DATE 10.3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	4	17503					
81	03	5	17503	N24	E57	337	800	
81	03	6	17503					
81	03	7	17503					
81	03	8	17503	N24	E18		600	
81	03	9	17503	N24	E06		600	
81	03	10	17503	N24	W06		1100	
81	03	11	17503	N25	W19	3	500	3
81	03	12	17503	N25	W33	335	1100	3.5
81	03	13	17503					
81	03	14	17503					
81	03	15	17503	N26	W68	331	300	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N23	E68				H	140	1	HSX
	N23	E43				B	150	1	HSX
	N25	E30				H	130	1	HSX
22113	N24	E18	348	(BP)	5	H	150	2	CSO
22113	N25	E05	339	(AP)	5	B	180	2	CHO
22113	N25	W07	337	(AP)	5	B	130	1	HHX
22113	N25	W21	333	(AP)	5	H	150	2	HSX
22113	N24	W33	327	(AP)	5	H	130	1	HSX
	N25	W45				H	250	1	HSX
22113	N24	W58	336	(AP)	4	H	180	1	HSX
22113	N24	W71	3	(AP)	3	H	120	1	HSX

SUNSPOTS — BOULDER PROMINENCES — NO DATA — MAGNETOGRAM Solid - Plus; zero level Dashed - Minus — 2257 UT

HALE REGION 17506 CMP DATE 10.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	5	17506	S06	E63	331	200	3.0
81	03	8	17506	S06	E22	331	100	2.5
81	03	9	17506	S05	E08	333	200	2.0
81	03	10	17506	S05	W04	333	200	2.5
81	03	11	17506	S04	W17	332	100	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS

SAN FERNANDO — 1966 UT — STANFORD — Levels 0 μT ±50 ±100 ±200 ...

HALE REGION 17520 CMP DATE 10.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	10	17520	S16	W15	330	100	2.0
81	03	12	17520	S16	W27	329	100	2.5
81	03	15	17520	S15	W70	333	300	3.0
81	03	16	17520	S15	W85	335	200	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S16	W17				L		1	AXX
22131	S15	W67	331	(B)	2	H	10	2	BXO
22131	S16	W80	331	BF	3	B	60	2	CSO

HALE REGION 17511 CMP DATE 11.1 RETURN OF REAR OF REGION 17454 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	8	17511	N14	E28	325	800	3.0
81	03	9	17511	N14	E17	324	2100	3.0
81	03	10	17511	N14	E05	324	1800	3.0
81	03	11	17511	N15	W12	327	1400	3.0
81	03	12	17511	N15	W24	326	1300	3.0
81	03	15	17511	N15	W57	320	500	2.5
81	03	16	17511	N15	W65	315	300	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N17	E19				H		1	AXX
22118	N13	E18	326	(B)	3	B	30	1	CRO
22118	N17	E06	324	(BY)	4	B	10	3	BXO
22118	N17	W04	321	AP	1	H		1	AXX
22118	N17	W18	322	(AF)	3	B	10	1	AXX
	N18	W57				L	10	2	BXO

BOULDER — 1613 UT

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HALE REGION 17512 CMP DATE 12.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	7	17512						N10 E60				H	40	12	CRO
81	03	8	17512	N07 E42	311	1200	3.5	22115	N08 E44	312	(BY)	4	H	150	21	ESI
81	03	9	17512	N07 E28	313	2000	4.0	22115	N08 E31	313	(BY)	4	B	370	50	DAI
81	03	10	17512	N07 E15	314	2300	4.0	22115	N07 E17	313	(D)	5	B	390	31	DKI
81	03	11	17512	N07 E02	313	1900	3.5	22115	N07 E04	313	(BY)	5	H	620	61	EKI
81	03	12	17512	N07 W12	314	2300	3.5	22115	N07 W10	314	(D)	5	H	390	42	EHI
81	03	13	17512						N08 W23				H	360	35	ESI
81	03	14	17512					22115	N07 W38	316	(D)	5	H	790	22	EKI
81	03	15	17512	N07 W52	315	2500	3.5	22115	N07 W53	317	(D)	4	H	850	24	EKI
81	03	16	17512	N07 W64	314	3100	3.5	22115	N07 W65	316	(B)	4	B	720	16	EKI
81	03	17	17512	N07 W79	314	900	3.0	22115	N08 W75	313	(BF)	3	B	160	16	EKI

HALE REGION 17513 CMP DATE 12.8

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	7	17513						N10 E60				H	40	12	CRO
81	03	8	17513	N10 E52	301	700	3.5	22116	N11 E52	304	(B)	3	H	150	21	ESI
81	03	9	17513	N12 E38	303	700	3.5	22116	N12 E41	303	(B)	3	B	10	6	BXO
81	03	10	17513	N11 E26	303	800	3.5		N07 E17				B	390	31	DKI
81	03	11	17513	N12 E13	302	400	3.5		N07 E04				H	620	61	EKI
81	03	12	17513	N12 E00	302	600	3.0									
81	03	13	17513						N08 W23				H	360	35	ESI
81	03	15	17513	N12 W42	305	300	3.0									
81	03	16	17513	N11 W54	304	300	3.0		N08 W60				B	720	16	EKI

HALE REGION 17516 CMP DATE 13.9

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	10	17516	S23 E42	287	100	3.0									
81	03	11	17516	S22 E27	288	100	1.5									

HALE REGION 17526 CMP DATE 14.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	14	17526					22127	S16 W06	284	(B)	4	H	40	5	CSO
81	03	15	17526	S16 W22	285	400	3.0	22127	S16 W20	284	(B)	4	H	110	9	DAO
81	03	16	17526	S16 W34	284	600	3.0	22127	S16 W33	284	(B)	3	B	50	5	DSO
81	03	17	17526	S15 W48	283	300	2.5	22127	S16 W47	285	(B)	3	B	20	3	BXO
81	03	18	17526	S15 W60	283	200	3.0		S16 W51				L	10	2	BXO

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HALE REGION 17514 CMP DATE 15.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	8	17514	S06	E81	272	300	3.0
81	03	9	17514	S06	E75	266	800	2.5
81	03	10	17514	S07	E60	269	1500	3.0
81	03	11	17514	S06	E46	269	2100	3.5
81	03	12	17514	S06	E34	268	2200	3.5
81	03	13	17514					
81	03	14	17514					
81	03	15	17514	S06	W09	272	2600	4.0
81	03	16	17514	S06	W22	272	2500	3.5
81	03	17	17514	S05	W36	271	1900	3.5
81	03	18	17514	S05	W59	282	1600	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22117	S06	E80	276	X	1	H	50	2	DAO
22117	S05	E69	275	(AP)	3	B	70	2	DSO
22117	S06	E59	271	(BP)	3	B	90	8	CAI
22117	S05	E44	273	(BP)	4	H	100	15	CAO
22117	S04	E30	274	(D)	3	H	180	11	CAI
	S05	E18				H	70	16	CAO
22117	S05	E04	274	(BY)	3	H	120	17	EKI
22117	S05	W08	272	(B)	4	H	110	28	DSI
22117	S04	W22	273	(B)	4	B	90	11	DAI
22117	S05	W36	274	(B)	3	B	20	6	CAO
22117	S05	W47	272	(B)	2	P	20	3	BXO

HALE REGION 17518 CMP DATE 15.2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	10	17518	N09	E68	261	600	2.5
81	03	11	17518	N11	E45	270	400	3.0
81	03	12	17518	N10	E23	279	400	3.0
81	03	13	17518					
81	03	14	17518					
81	03	15	17518	N11	W07	270	300	3.0
81	03	16	17518	N09	W22	272	400	3.0
81	03	17	17518	N10	W38	273	300	2.5
81	03	18	17518	N11	W49	272	200	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N09	E68				B		1	AXX
22128	N07	E08	270	(AP)	2	B	70	24	CAI
22128	N07	W05	269	(AP)	2	H	10	1	AXX

HALE REGION 17521 CMP DATE 16.1 RETURN OF REGION 17465 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	11	17521	S21	E55	260	200	3.0
81	03	12	17521	S22	E44	258	200	3.0
81	03	13	17521					
81	03	14	17521					
81	03	15	17521	S22	E05	258	500	3.5
81	03	16	17521	S22	W08	258	300	3.0
81	03	17	17521	S19	W25	260	200	3.0
81	03	18	17521	S21	W36	259	100	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22121	S21	E58	259	(B)	3	H	10	2	BXO
22121	S21	E44	260	(B)	3	H	50	5	DAI
	S21	E30				H	60	6	DAO
22121	S21	E17	261	(B)	4	H	50	7	DSI
22121	S21	E04	260	(B)	3	H	50	7	DAO
22121	S21	W08	259	(BP)	3	B	20	4	BXO

HALE REGION 17523 CMP DATE 16.1 RETURN OF REGIONS 17462 AND 17463 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	10	17523					
81	03	11	17523	N11	E58	257	900	3.0
81	03	12	17523	N11	E48	254	1100	3.0
81	03	13	17523					
81	03	15	17523	N11	E04	259	1300	3.0
81	03	16	17523	N12	W12	262	1600	3.5
81	03	17	17523	N14	W29	264	1400	3.5
81	03	18	17523	N14	W39	262	1700	3.5
81	03	19	17523					
81	03	20	17523					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22120	N11	E69	261	(AP)	2	B		1	AXX
22120	N10	E57	260	(AP)	3	B	10	1	AXX
22120	N10	E48	256	B	1	P	20	2	BXO
	N09	E32				P	10	3	BXO
	N10	E04				L	20	10	BXO
22135	N14	W12	263	(B)	4	B	20	5	BXO
22135	N14	W26	264	(B)	3	B	40	8	CAO
22135	N13	W39	264	(B)	4	H	120	12	DSO
	N13	W53				H	320	7	DAO
	N14	W64				B	70	4	CAO

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HALE REGION 17517

CMP DATE 16.5

RETURN OF REGION 17461 ROTATION

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	10	17517	N15	E65	264	300	2.5
81	03	11	17517	N18	E55	260	500	3.0
81	03	12	17517	N18	E43	259	600	3.0
81	03	14	17517					
81	03	15	17517	N19	E06	257	700	3.0
81	03	16	17517	N22	W03	253	500	3.0
81	03	17	17517	N22	W20	255	300	3.0
81	03	18	17517	N21	W31	254	200	3.0

SUNSPOT DATA

MW	NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	22129	N17	E13	265	(AD)	1				

HALE REGION 17522

NO DATA

CMP DATE 16.5

RETURN OF SOUTHERN PART OF REGION 17461 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	11	17522	N06	E58	257	200	3.0
81	03	12	17522	N05	E46	256	200	3.0
81	03	13	17522					
81	03	15	17522	N05	E07	256	300	2.5
81	03	16	17522	N05	W03	253	300	3.0
81	03	17	17522	N06	W24	259	200	3.0

SUNSPOT DATA

MW	NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
		N13	E26				P	10	3	BXO
		N10	E14				L	20	10	BXO
		N10	W24				M		1	AXX

HALE REGION 17525

CMP DATE 17.4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	12	17525	N10	E62	240	200	3.0
81	03	15	17525	N12	E20	243	400	3.0
81	03	16	17525	N12	E08	242	400	3.0
81	03	17	17525	N13	W07	242	200	3.0
81	03	18	17525	N14	W20	243	200	3.0

SUNSPOT DATA

MW	NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
		N14	E60				B	10	2	BXO
		N15	E26				B		1	AXX
	22139	N09	W08	246	(AF)	2	L	50	8	CRO

HALE REGION 17524

CMP DATE 17.7

RETURN OF REGION 17467 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	12	17524	N18	E66	236	200	2.5
81	03	12	17524	N18	E66	236	200	2.5
81	03	13	17524					
81	03	14	17524					
81	03	15	17524	N18	E28	235	300	3.0
81	03	16	17524	N18	E14	236	600	3.0
81	03	17	17524	N18	W03	238	500	3.0
81	03	18	17524	N18	W13	236	300	3.0

SUNSPOT DATA

MW	NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	22124	N16	E65	239	(AD)	2	B	10	2	BXO
	22125	N20	E67	237	(AD)	2	P	20	1	AXX
		N19	E57				R	30	3	BXO
	22125	N18	E40	238	(AF)	3	P	10	5	BXO
	22125	N17	E26	238	(AD)	2	B	10	4	HXO
	22125	N17	E14	237	(AD)	2	B		4	AXX

HALE REGION 17529

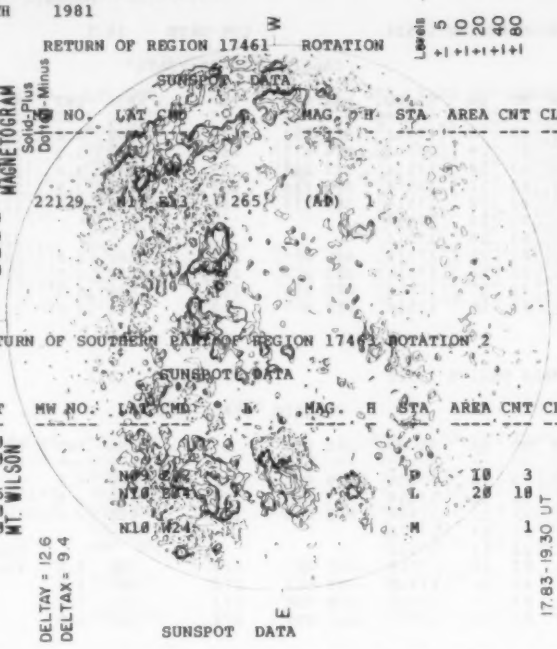
CMP DATE 20.2

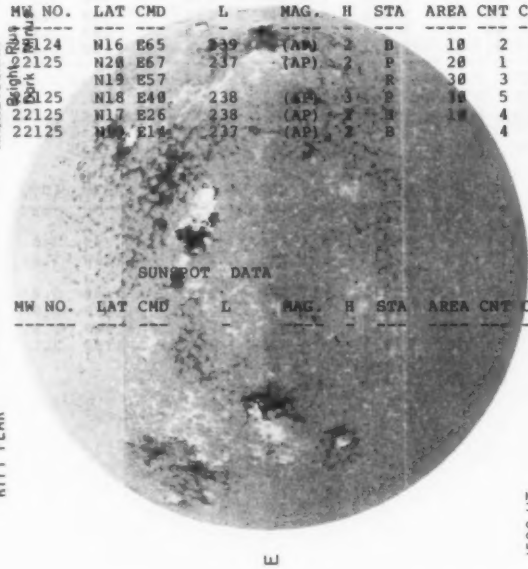
CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	03	15	17529	S08	E59	204	600	2.5
81	03	16	17529	S08	E46	204	500	2.5
81	03	17	17529	S08	E30	205	500	3.0
81	03	18	17529	S08	E18	205	300	2.5
81	03	20	17529					
81	03	23	17529	S07	W50	207	200	2.0
81	03	24	17529	S10	W62	206	200	2.0
81	03	25	17529	S08	W74	205	100	1.0

SUNSPOT DATA

MW	NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS





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HALE REGION 17530 CMP DATE 20.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	15	17530	S25	E60	203	200	1.5	22133	S23	E58	206	(AP)	2				
81	03	16	17530	S25	E46	204	200	2.0										
81	03	17	17530	S24	E31	204	200	2.0	22137	S24	E33	205	(AF)	3	M	10	2	BXO
81	03	18	17530	S24	E18	205	100	2.5										
81	03	23	17530	S24	W48	205	100	2.0										
81	03	24	17530	S25	W60	204	100	2.0										

HALE REGION 17528 CMP DATE 20.8 RETURN OF REAR OF REGION 17469 ROTATIONS 4 AND 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	14	17528						22130	N08	E69	209	(AP)	3	H	170	2	CSO
81	03	15	17528	N12	E66	197	1300	3.0	22130	N08	E57	207	(D)	4	H	240	3	DAO
81	03	16	17528	N10	E46	204	2500	3.5	22130	N08	E44	207	(D)	4	B	250	4	DHI
81	03	17	17528	N12	E37	198	4000	3.5	22130	N09	E30	208	(D)	4	B	250	8	DKI
81	03	18	17528	N12	E25	198	2500	4.5	22130	N08	E17	208	(BY)	4	H	300	10	DKI
81	03	19	17528							N15	E21				H	10	2	BXO
81	03	20	17528							N13	E05				B	30	4	CSI
81	03	21	17528							N08	W25				P	680	29	DKI
81	03	22	17528							N08	W38				H	620	27	DKC
81	03	23	17528	N13	W47	204	2300	3.5	22130	N08	W52	210	(D)	4	H	740	23	DKI
81	03	24	17528	N13	W57	201	2400	3.5	22130	N08	W65	210	(D)	4	B	590	4	EKI
81	03	25	17528	N14	W62	193	1500	3.5	22130	N08	W76	208	X	3	H	650	9	DKI

HALE REGION 17527 CMP DATE 21.2 RETURN OF FRONT PART OF REGION 17469 ROTATIONS 4 AND 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	13	17527							N08	E81				B	70	1	HSX
81	03	15	17527	N08	E45	218	300	2.5										
81	03	16	17527	N08	E32	218	400	3.0										
81	03	17	17527	N08	E15	220	300	3.0										
81	03	18	17527	N09	E05	218	300	3.0		N09	E14				M	320	11	DAI
81	03	19	17527							N08	E04				H	250	8	DSO

HALE REGION 17534 CMP DATE 21.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	18	17534	S24	E31	192	100	2.0		S23	E28				L		2	BXO
81	03	23	17534	S23	W37	194	100	2.0										
81	03	24	17534	S23	W52	196	100	2.0										

HALE REGION 17532 CMP DATE 21.7

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	15	17532						22134	N14	E74	190	(AP)	2	H	150	2	DAO
81	03	16	17532	N15	E68	182	400	2.5	22134	N13	E61	190	(BF)	3	B	20	2	BXO
81	03	17	17532	N15	E55	180	200	3.0	22134	N14	E47	191	(B)	3	B	60	2	DSO
81	03	18	17532	N15	E38	185	200	2.5	22134	N15	E36	189	(B)	3	H	10	3	AXX
81	03	19	17532							N15	E21				H	10	2	BXO
81	03	20	17532							N13	E05				B	30	4	CSI
81	03	21	17532							N13	W08				P	20	16	BXO
81	03	22	17532							N13	W21				H	10	6	BXO
81	03	23	17532	N15	W27	184	200	2.5		N12	W24				L		1	AXX
81	03	24	17532	N15	W38	182	200	1.5		N13	W46				H	20	2	BXO

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HALE REGION 17532 (CONT) CMP DATE 21.7

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	26	17532							N15	W72				B	20	1	AXX

HALE REGION 17531 CMP DATE 22.6 RETURN OF REGION 17474 ROTATION 2

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	16	17531	N18	E78	172	400	3.5	22196	N18	E75	176	(AP)	2	B	60	6	CSO
81	03	17	17531	N18	E60	175	800	3.5	22196	N20	E62	176	(B)	4	B	110	6	DAO
81	03	18	17531	N18	E49	174	700	3.0	22140	N14	E55	170	X	1	H	120	6	CAO
81	03	18	17531	N18	E49	174	700	3.0	22196	N19	E49	176	(B)	4	H	180	9	DAO
81	03	19	17531							N19	E35				H	70	5	CAO
81	03	20	17531							N18	E22				B	50	8	CAI
81	03	21	17531							N19	E09				P	60	4	DSO
81	03	22	17531							N20	W03				H	60	7	CAO
81	03	23	17531	N20	W16	173	1100	3.0	22140	N19	W14	172	(B)	4	H	50	7	CAO
81	03	24	17531	N20	W29	173	1200	3.0	22140	N19	W27	172	(BF)	3	H	60	11	CRO
81	03	25	17531	N21	W42	173	2000	3.0	22140	N20	W40	172	(BF)	3	H	70	9	DSI
81	03	26	17531							N20	W51				H	10	4	BXO
81	03	27	17531	N20	W62	168	1100	3.0		N16	W61				H		1	AXX

HALE REGION 17533 CMP DATE 23.8

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	17	17533	N11	E69	166	700	3.5	22138	N11	E75	163	(BF)	3	B	20	2	CSO
81	03	18	17533	N10	E58	165	600	3.5	22138	N11	E59	166	(B)	4	H	120	6	CAO
81	03	19	17533							N10	E44				H	90	3	DAO
81	03	20	17533							N10	E31				B	140	7	DKO
81	03	21	17533							N12	E17				P	90	11	CSO
81	03	22	17533							N12	E01				H	20	4	BXO
81	03	23	17533	N12	W10	167	1200	3.0	22141	N12	W04	162	X	1	H	20	7	CRO
81	03	24	17533	N12	W23	167	1200	3.0	22141	N12	W17	162	X	1	H	10	6	BXO
81	03	25	17533	N12	W33	164	1100	3.0	22141	N10	W30	162	(B)	2	H		2	AXX
81	03	26	17533							N10	W44				H	110	2	HAX
81	03	27	17533	N12	W58	164	400	3.0		N10	W56				H	50	1	HAX

HALE REGION 17535 CMP DATE 24.9

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	21	17535							N13	E41				P	620	23	EKI
81	03	22	17535							N16	E28				H	750	22	EKO
81	03	23	17535	N14	E14	143	1700	3.5	22136	N15	E11	147	(D)	5	H	870	20	EKO
81	03	24	17535	N15	E02	142	2400	3.5	22136	N15	W00	145	(BY)	5	H	880	41	FKI
81	03	25	17535	N14	W12	143	3600	3.5	22136	N13	W15	147	(BY)	5	H	1140	39	EKI
81	03	26	17535							N14	W25				H	650	25	EKI
81	03	27	17535	N15	W36	142	3100	3.5		N15	W37				H	810	28	EKI
81	03	28	17535						22136	N13	W51	143	(BY)	5	H	930	24	EKI
81	03	29	17535	N15	W65	144	1500	3.5	22136	N12	W65	145	(B)	4	H	800	9	EKO
81	03	30	17535	N16	W75	139	500	3.0	22136	N13	W81	147	B	2	H	160	6	EKO

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HALE REGION 17537 CMP DATE 25.0 RETURN OF REGION 17479 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	21	17537							S17	E45				P	100	4	DAO
81	03	22	17537							S18	E32				H	70	8	DAO
81	03	23	17537	S18	E16	141	700	3.0	22142	S17	E16	142	(B)	4	H	60	6	HAX
81	03	24	17537	S18	E03	141	900	3.0	22142	S18	E03	142	(B)	3	P	20	4	CRO
81	03	25	17537	S18	W11	142	500	2.5	22142	S18	W09	141	(B)	2	H	10	4	BXO
81	03	26	17537							S18	W22				H	10	2	AXX
81	03	27	17537	S15	W35	141	600	3.0		S18	W35				H	20	2	CRO
81	03	28	17537						22142	S20	W48	140	(B)	2	H	70	8	DAO
81	03	29	17537	S17	W65	144	500	3.0	22142	S20	W60	140	(AF)	2	H	20	3	BXO
81	03	30	17537	S17	W78	142	300	3.0	22142	S19	W72	138	(AF)	3	H		1	AXX

HALE REGION 17536 CMP DATE 25.6

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	21	17536							N17	E54				P	90	1	HSX
81	03	22	17536							N18	E40				H	80	3	HAX
81	03	23	17536	N18	E27	130	1100	3.5	22144	N20	E27	131	(BF)	4	H	60	6	CAO
81	03	24	17536	N18	E15	129	1200	3.0	22144	N19	E14	131	(AP)	4	H	50	11	CSO
81	03	25	17536	N18	W02	133	900	3.0	22144	N19	E01	131	(AP)	4	H	30	5	CAO
81	03	26	17536							N18	W12				H	20	6	CRO
81	03	27	17536	N18	W24	130	700	3.0		N18	W23				H	10	2	BXO
81	03	29	17536	N21	W51	130	500	3.0		N20	W50				H		1	AXX
81	03	30	17536	N22	W62	126	300	3.0										

HALE REGION 17538 CMP DATE 25.8

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	21	17538							S28	E52				P	40	3	CSO
81	03	22	17538							S28	E41				H	60	6	CRO
81	03	23	17538	S27	E27	130	500	3.0	22143	S28	E27	131	(B)	3	H	20	8	CRO
81	03	24	17538	S27	E15	129	700	3.0	22143	S27	E16	129	(B)	3	H	30	4	CRO
81	03	25	17538	S27	E01	130	600	3.0	22143	S28	E03	129	(BF)	2	H	10	5	BXO
81	03	27	17538	S27	W24	130	800	3.0										
81	03	29	17538	S27	W46	125	300	2.5										

HALE REGION 17540 CMP DATE 27.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	23	17540	S08	E35	122	100	2.0										
81	03	24	17540	S08	E23	121	100	1.5										

HALE REGION 17541 CMP DATE 27.0 RETURN OF FRONT PORTION OF REGION 17481 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	23	17541	S15	E43	114	300	2.5										
81	03	24	17541	S15	E30	114	600	3.0										
81	03	25	17541	S15	E17	114	500	3.0		S16	E17				B		1	AXX
81	03	26	17541							S17	E12				B	10	3	BXO
81	03	27	17541	S15	W08	114	600	3.0										
81	03	28	17541						22148	S17	W27	119	(AP)	2	H		1	AXX
81	03	29	17541	S15	W38	117	400	3.0	22148	S18	W38	118	(AP)	2	H	10	5	BXO
81	03	30	17541	S15	W54	118	800	3.5	22148	S16	W52	118	(B)	4	H	80	11	BXO
81	03	30	17541	S15	W54	118	800	3.5	22160	S07	W54	120	(AP)	1	H	10	1	AXX
81	03	31	17541	S14	W67	116	500	3.0	22148	S16	W65	118	(B)	3	H	60	5	DAO
81	04	1	17541	S15	W80	118	300	3.0	22148	S16	W76	116	(AP)	3	B	30	2	CRO

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HALE REGION 17544 CMP DATE 27.3 RETURN OF REGION 17483 ROTATION 3

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	23	17544	N16	E48	109	300	3.0										
81	03	24	17544	N17	E34	110	300	3.0										
81	03	25	17544	N17	E20	111	400	3.0		N18	E20				B		1	AXX
81	03	27	17544	N18	W05	111	400	3.0										
81	03	29	17544	N18	W33	112	300	3.0										
81	03	30	17544	N18	W46	110	300	2.5										
81	03	31	17544	N20	W59	108	100	1.5		N21	W50				H	50	1	HSX

HALE REGION 17539 CMP DATE 27.7

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	21	17539							S45	E73				P	70	1	HSX
81	03	22	17539							S44	E63				H	10	2	AXX
81	03	23	17539	S45	E47	110	500	3.5		S44	E51				H	40	6	CRO
81	03	24	17539	S45	E36	108	500	3.5	22146	S43	E39	106	(B)	4	H	40	6	CSO
81	03	25	17539	S45	E26	105	1100	3.5	22146	S43	E28	104	(B)	4	H	60	5	DAO
81	03	26	17539							S42	E15				H	90	8	DAO
81	03	27	17539	S44	E08	106	800	3.5		S43	E04				H	150	10	DAO
81	03	28	17539						22146	S44	W10	102	(D)	5	H	470	9	DKC
81	03	29	17539	S44	W24	103	900	4.0	22146	S45	W17	97	(D)	4	H	600	10	DKC
81	03	30	17539	S43	W37	101	1400	3.5	22146	S43	W33	99	(D)	5	H	670	12	DKC
81	03	31	17539	S43	W47	96	900	4.0	22146	S43	W45	98	(D)	4	H	660	14	DKC
81	04	1	17539	S43	W61	99	900	4.0	22146	S43	W56	96	(D)	4	H	670	14	DKC
81	04	2	17539							S42	W70				B	310	6	DKI
81	04	3	17539						22146	S43	W82	96	BY	2	P	130	3	DAI

HALE REGION 17542 CMP DATE 27.9 RETURN OF REAR OF REGIONS 17481&17487 ROTATIONS 2 AND 4

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	23	17542	S19	E56	101	1000	3.0										
81	03	24	17542	S19	E44	100	1300	3.0										
81	03	25	17542	S19	E29	102	1700	3.0										
81	03	26	17542							S17	E12				B	10	3	BXO
81	03	27	17542	S21	E03	103	1500	3.0		S16	E06				L	10	6	BXO
81	03	29	17542	S20	W24	103	1200	3.0		S21	W20				H		1	AXX
81	03	30	17542	S20	W35	99	1600	3.0		S16	W44				L	30	11	BXO
81	03	31	17542	S18	W53	102	800	3.0		S16	W60				R	50	2	DRO
81	04	1	17542	S18	W64	102	900	3.0										
81	04	2	17542							S15	W81				L	10	1	AXX

HALE REGION 17545 CMP DATE 28.6

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	22	17545							N22	E72				H	60	1	HSX
81	03	23	17545	N20	E66	91	1000	3.0	22145	N21	E61	97	(B)	4	H	80	4	CSO
81	03	24	17545	N22	E53	91	1600	3.5	22145	N21	E51	94	(BP)	4	H	160	5	DAO
81	03	25	17545	N22	E40	91	2200	3.0	22145	N21	E39	93	(B)	4	H	60	6	DSO
81	03	26	17545							N21	E25				H	80	7	DAO
81	03	27	17545	N22	E16	90	2000	3.5		N21	E15				H	30	7	CAO
81	03	28	17545						22145	N20	W03	95	(AP)	4	H	40	10	CSO
81	03	29	17545	N21	W14	93	2100	3.5	22145	N19	W18	98	(BY)	4	H	100	13	CSO

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HALE REGION 17545 (CONT) CMP DATE 28.6

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	30	17545	N23	W26	90	3000	3.5	22145	N21	W30	96	(BY)	4	H	60	6	DSO
81	03	31	17545	N23	W40	89	1400	3.0	22145	N21	W45	98	(BY)	4	H	40	3	HSX
81	04	1	17545	N23	W52	90	1300	3.0	22145	N22	W57	97	(BP)	4	H	60	1	HSX
81	04	2	17545							N22	W71				B	20	1	AXX

HALE REGION 17563 CMP DATE 28.6

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	1	17563	N10	W55	93	200	3.0		N12	W54				P	10	2	BXO
81	04	2	17563							N11	W72				H	10	1	AXX

HALE REGION 17543 CMP DATE 29.4 RETURN OF FRONT HALF OF REGION 17491 ROTATION 2

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	23	17543	S12	E72	85	300	2.5										
81	03	24	17543	S12	E66	78	900	3.0										
81	03	25	17543	S12	E50	81	1100	3.0										
81	03	27	17543	S12	E26	80	1000	3.0		S16	E20				L		1	AXX
81	03	29	17543	S09	W04	83	900	3.0										
81	03	30	17543	S09	W16	80	900	3.0		S04	W17				B		1	AXX
81	03	31	17543	S09	W33	82	500	3.0										
81	04	1	17543	S09	W45	83	500	3.0										

HALE REGION 17546 CMP DATE 29.9

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	24	17546	N23	E67	77	100	1.5										
81	03	25	17546	N23	E55	76	200	2.0										
81	03	26	17546							N23	E46				B	10	1	AXX
81	03	27	17546	N22	E32	74	300	3.0										
81	03	29	17546	N22	E02	77	400	3.0										
81	03	30	17546	N23	W12	76	100	3.0										
81	03	31	17546	N24	W25	74	200	2.5										
81	04	1	17546	N24	W38	76	300	3.0										
81	04	4	17546	N24	W69	67	300	3.0	22175	N24	W68	68	(B)	2	H	40	3	DRO

HALE REGION 17547 CMP DATE 30.0 RETURN OF REAR HALF OF REGION 17491 ROTATION 2

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	24	17547	S17	E65	79	200	3.0										
81	03	25	17547	S18	E54	77	500	3.0										
81	03	27	17547	S19	E33	73	500	3.0										
81	03	29	17547	S18	E04	75	500	3.0		S13	E12				H	90	5	CSO
81	03	30	17547	S18	W06	70	600	3.0	22161	S25	E05	61	(AF)	3	B	10	4	BXO
81	03	31	17547	S18	W22	71	500	3.0										
81	04	1	17547	S20	W33	71	400	3.0										
81	04	4	17547	S19	W69	67	200	2.0										

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HALE REGION 17548 CMP DATE 30.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	24	17548	S13 E80	64	600	3.0		22147	S11 E80	65	X	2	H	120	2	DAO
81	03	25	17548	S10 E66	65	500	3.0		22147	S11 E68	64	X	3	H	170	3	DAO
81	03	26	17548							S12 E52				H	80	2	DAO
81	03	27	17548	S12 E44	62	500	3.0			S12 E40				H	90	3	DAO
81	03	28	17548						22147	S12 E27	65	(B)	4	H	110	4	DAO
81	03	29	17548	S12 E12	67	600	3.0		22147	S11 E12	68	(AP)	4	H	90	5	CSO
81	03	30	17548	S12 W02	66	800	3.0		22147	S12 W03	69	(AP)	4	H	50	5	CSO
81	03	31	17548	S12 W16	65	500	3.0		22147	S12 W16	69	(AP)	4	H	40	2	HSX
81	04	1	17548	S12 W28	66	700	3.0		22147	S12 W28	68	(AP)	4	H	30	1	HAX
81	04	2	17548							S10 W40				B	40	1	HSX
81	04	3	17548						22147	S11 W55	69	(AP)	4	H	50	1	HSX
81	04	4	17548	S10 W68	66	400	2.5		22147	S11 W69	69	(AP)	3	H	10	1	AXX
81	04	5	17548	S08 W82	67	200	2.0										

HALE REGION 17550 CMP DATE 31.4

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	27	17550	N12 E51	55	100	2.5										
81	03	29	17550	N13 E24	55	200	3.0		22155	N16 E22	58	(B)	3	H	10	3	BXO
81	03	30	17550	N15 E08	56	100	2.5		22155	N13 E10	56	(AP)	3	H	10	1	AXX

HALE REGION 17549 CMP DATE 31.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	03	25	17549	S15 E81	50	200	3.0			S14 E79				H		1	AXX
81	03	26	17549							S13 E69				H	10	2	AXX
81	03	27	17549	S16 E56	50	400	3.0			S14 E53				H	30	5	BXO
81	03	28	17549						22150	S15 E38	54	(B)	3	H	40	4	CRO
81	03	29	17549	S16 E27	52	500	3.0		22150	S12 E28	52	(AP)	2	H		1	AXX
81	03	30	17549	S16 E15	49	500	3.0		22150	S14 E13	53	(AP)	3	H	10	1	AXX
81	03	31	17549	S16 E00	49	300	3.0										
81	04	1	17549	S16 W12	50	500	3.0										

DAILY CALCIUM PLAGE INDEX

MARCH 1981

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
81	3	1	*	81	3	11	32.8	81	3	21	*
81	3	2	*	81	3	12	35.7	81	3	22	*
81	3	3	59.6	81	3	13	*	81	3	23	29.4
81	3	4	*	81	3	14	*	81	3	24	37.3
81	3	5	59.3	81	3	15	31.8	81	3	25	43.7
81	3	6	*	81	3	16	36.0	81	3	26	*
81	3	7	*	81	3	17	29.9	81	3	27	37.6
81	3	8	33.0	81	3	18	23.3	81	3	28	*
81	3	9	36.1	81	3	19	*	81	3	29	33.0
81	3	10	41.1	81	3	20	*	81	3	30	40.2
								81	3	31	26.1

* NO OBSERVATIONS

NOTE: On these dates, spectroheliograms from other observatories were used (other than Mt. Wilson):

Sacramento Peak Observatory, New Mexico: None
Institute for Astronomy, Hawaii: March 3 and 5, 1981

No spectroheliograms from any source were available for March 1, 2, 4, 6, 7, 13, 14, 19-22, 26, and 28, 1981.

No sunspot observations were made at Mt. Wilson Observatory on March 1, 2, 4-7, 13, 19-22, 26, and 27, 1981.

Contiguous plages for March 1981: None

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0745	CULG				0000	0030					IS,W
			CULG				0003	0030					IIIN,W
			CULG				0030	0305					IIIS,W
			CULG				0030	0315	1				IS
			CULG	0056	0102	1							IIIG,N
			CULG				0305	0745					IIIN,W
			CULG				0315	0745					IS,W
			CULG	0344	0344.5	1							IIIG
			CULG				0353	0745	1				N,DC
			CULG				0417	0725	1				N,RS,DP
			CULG	0515.5	0516								IIIG,W
	0640	1630	DWIN										
	0642	1626	WEIS				0751	1621	1				IIIN
			WEIS				1128	1614	1				IN
	1353	2400	HARV				1356	2400	2				I
			HARV				1800		1				IIIB
			HARV				1811	1812	2				IIIG
			HARV				1816		3	1816		2	IIIG
			HARV				1913		1				IIIB
	2045	2400	CULG				2045	2400					IIIS,W
			CULG				2045	2400	1				S,RS,DP
			CULG				2045	2400	1				IS,DC
			CULG							2047	2400	1	IIIS
			LEAR				2300.0	1035.0	1				B
02			CULG				0000	0630					N,RS,DP,W
			CULG				0000	0725					IS,W
	0000	0744	CULG				0000	0200					IIIS,W
			CULG				0200	0712		0004	0117		IIIN,W
			CULG				0630	0744	1				S,RS,DP
			CULG	0632	0632.5	1							IIIG
	0640	0810	WEIS				0644	1623	2				IS,DC
	0813	1020	WEIS				0654	1629	2				IIIN
			CULG				0712	0744	1				IIIS
			CULG				0725	0744	1				IS
	0740	1630	DWIN	1325.1	1326.1	1							IIIG
	1345	2400	HARV				1345	1420	3				I
			HARV				1420	2400	2				I
			HARV				1448	2114	1				IIIN
			HARV				1458	1513	3				II
	1059	1531	WEIS				1458	1510	2				II HARM
			SGMR				1458.7	1500.1	1				CONT
	1548	1629	WEIS										
			CULG				2044	2400					IS,W,DC
			CULG				2044	2116	1				S,RS,DP
	2044	2400	CULG				2044	2127					IIIS,W
			CULG				2116	2321	1				N,RS,DP
03			LEAR				0000.0	1034.0	1				B
	0000	0744	CULG				0005	0341					IN,W
			CULG				0033	0744	1				N,RS,DP
			CULG				0341	0650					IS,W
			CULG	0448		1							IIIB
			CULG	0450		1							IIIB
			CULG				0525	0651					IIIN,W
			CULG	0625	0650								IS,W
	0638	1630	WEIS				0642	0717	2				IIIS
			CULG				0650	0744	1				IS,DC,C
			CULG	0650	0744	1							IS,C
			CULG				0651	0744	1				IIIS
	0635	1630	DWIN	0651	0750	1							IV P
			CULG				0721.5						DP,W
			CULG				0729		2				IIIB
			LEAR				0810.5	0815.4	1				II
			DWIN	1239.9	1240.2	1							IIIG
	1345	2320	HARV				1411	2320	1				IN
			WEIS				1426.2	1426.3	1				IIIB
			HARV				1501	2120	1				IIIN

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03			WEIS				1607.1	1607.2	1				IIIB
			WEIS				1614.3	1614.4	1				IIIB
	2045	2400	CULG				2119.5		1				IIIB
			CULG				2225.5						IIIB,W
04	0000	0744	CULG				0031						IIIB,W
			CULG				0032.5						IIIB,W
			CULG	0201	0205	1							I
			CULG				0202		1				IIIB
			LEAR				0202.0	0202.7	1				CONT
			CULG	0207.5	0208	2							IIIG
			CULG				0429	0429.5	1				IIIG
			LEAR				0429.0	0429.5	1				CONT
			CULG				0503	0505	1				IIIGG
			LEAR				0503.0	0504.9	2				CONT
			LEAR				0801.0	0802.4	1				CONT
			WEIS				0801.7	0801.9	1				IIIG
	0636	0832	WEIS				0810.3	0813.5	1			II	
			LEAR				0810.5	0815.4	1			II	
	0834	1632	WEIS				0931	1043	1				IN
	0630	1630	DWIN	0933.4	0934.2	1							IIIG
			WEIS				1000	1146	2				CONT
			LEAR				1006.5	1033.0	1				S
			DWIN	1025.0	1026.7	1							IIIG
			WEIS				1213.1	1213.2	1				IIIG
	1345	2000	HARV				1607	1800	1				IN
			HARV				1729		1				IIIB
			HARV				1800	2000	2				I
	2044	2400	CULG	2136		1							UNCLF
			CULG				2218	2400					IS,W
			CULG				2230.5		1				IIIB
05	0000	0744	CULG	0004.5	0005	1							IIIG
			CULG	0045.5									IIIB,W
			CULG	0125	0130								I,W
			CULG	0145.5	0146	2							IIIG
			LEAR				0323.2	0323.6	1				III
			LEAR				0325.3	0328.3	2				V
			CULG	0325.5	0327	2	0325	0328	2	0326	0328	2	IIIGG
			CULG	0602	0642								UNCLF,W
			CULG				0609	0609.5	1				UNCLF
			CULG				0616	0744	1				IS,C
			CULG				0631						IIIS,W
	0630	1440	DWIN	0634.6	0636.4	1						IV	
			LEAR				0635.5	0740.0	1				B
			DWIN	0638.0	0642.1	1							IIIG
			CULG	0647	0647.5	1							IIIG
			DWIN	0725.7		1							IIIB
			WEIS				0853	1238	1				IN
	0634	1634	WEIS				0928.4	0928.6	1				IIIG
			WEIS				0932.8	0933.8	1				IIIG
			WEIS				1026.9	1027.5	1				IIIG
	1345	2400	HARV				1357	2100	1				IN
			WEIS				1500.9	1501.4	2				IIIG
			HARV				1501	2031	2				IIIN
			HARV	1518	1519	3	1518	1519	3				IIIGG
			WEIS				1518.0	1518.7	2				IIIG
			WEIS				1547.0	1547.2	1				IIIB
			HARV				1628	1631	3	1630	1631	2	IIIGG
			WEIS				1628.2	1631.3	3				IIIG
			HARV				1635	1639	3	1635	1639	2	IIIGG
			HARV				1647	1648	2	1647	1648	2	IIIG
			HARV				1726	1728	2	1726	1728	2	IIIG,V
			PALE				1726.0	1726.5	1				III
			SGMR				1726.1	1727.8	1				V
			HARV				1752		2	1752		2	IIIG,V
			PALE				2012.8	2013.3	1				III
			HARV				2013		3	2013		3	IIIG,G,V
			HARV	2100	2400	2	2100	2400	3				IC
	2043	2400	CULG	2107	2400		2111	2400					IS,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
05			CULG				2114	2127					IIIS,W
			HARV				2115	2118	2	2118		2	IIIGG
			CULG				2118	2118.5	1				IIIG
			CULG				2153		1				IIIB
			CULG				2211						IIIB,W
06	0000	0743	CULG				0000	0743					IN,W
			CULG							0245	0256		SWF,W
			LEAR				0340.6	0342.1	1				CONT
			CULG	0351.5	0353	2	0352	0353.5	2	0353	0353.5	1	IIIGG
			LEAR				0352.8	0353.4	1				V
			CULG	0455	0523								IN,W
			LEAR				0504.7	0504.9	1				III
			LEAR				0515.8	0519.3	1				CONT
			LEAR				0538.3	0538.6	1				CONT
			LEAR				0552.0	0552.5	1				CONT
			CULG				0608.5	0609	1				IIIG
			CULG				0609	0613					IIIN,W
			CULG	0621.5	0622	2							IIIG
	0632	0835	WEIS										
			CULG				0706						IIIB,W
	0839	1635	WEIS				0949.8	0950.3	2				IIIG
			WEIS				1224.6	1225.4	1				IIIG
			WEIS				1243.6	1247.1	3				IIIGG
			WEIS				1324.2	1324.4	1				IIIG
	0630	1630	DWIN	1331.2	1331.2	1							IIIB
			DWIN	1344.0	1345.5	1							IIIG
	1345	2400	HARV				1602	2351	2				IIIN
			HARV	1621	1622	1	1621	1622	1				IIIG
			WEIS				1621.2	1621.9	1				IIIG
			HARV				1630	2104	2				IN
			HARV	1642	2232	2							IIIN
			HARV				1737		2	1737		2	IIIG
			HARV				1816	1817	3				IIIG
			HARV				1913		2	1913		2	IIIG
			PALE				2023.6	2023.9	1				III
			HARV	2028		1	2024	2028	3	2024	2028	2	IIIG
			HARV	2033	2037	1	2033	2037	3	2033	2036	3	IIIGG
			PALE				2034.2	2036.4	2				CONT
			HARV	2040	2042	3	2040	2042	3	2040	2041	2	IIIGG
			CULG				2043	2400					IIIN,W
			PALE				2045.9	2046.3	2				V
	2043	2400	CULG				2046	2046.5	2				IIIG
			HARV				2046	2050	3	2046	2050	3	IIIG
			CULG				2049	2050	3				IIIG
			CULG	2049	2131								IIIN,W
			PALE				2049.6	2049.9	1				V
			HARV				2104	2140	3				I
			HARV	2112	2114	1	2112	2114	1				IIIGG
			CULG	2122.5	2123	1							IIIG
			CULG				2122.5	2351	1				IIIN
			HARV	2123		2	2123		3				IIIG
			CULG	2127.5	2128.5	2	2127.5	2129	3				IIIG
			PALE				2127.7	2129.5	2				CONT
			HARV	2128	2130	3	2128	2130	3	2128	2130	3	IIIGG,V
			HARV				2140	2400	1				IN
			CULG				2232.5	2233	2	2233		1	IIIG
			HARV				2233		2	2233		2	IIIG
			HARV				2244	2249	3	2245	2246	1	IIIGG
			CULG				2244	2246.5	2				IIIGG
			LEAR				2244.6	2246.3	1				CONT
			CULG				2248.5	2249	2	2248.5	2249	2	IIIG
			CULG				2249.5	2250	1	2249.5	2250	1	IIIG
			CULG				2319	2319.5					RS,DP,W
			LEAR				2341.3	2351.2	1				CONT
07			LEAR				0013.2	0034.1	1				S
	0000	0743	CULG				0013.5		1	0013.5		1	IIIB
			CULG				0014	0743					IIIN,W
			CULG				0024.5	0028	1	0026	0028	1	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
07			CULG				0026	0357	1				N,RS,DP
			LEAR				0147.3	0152.3	2				S
			CULG				0149	0630	1	0149	0338	1	IIIN
			PALE				0149.0	0152.7	1				CONT
			CULG				0151	0152	1				DP
			CULG	0156.5	0157	3	0156.5	0158	2				IIIG,V
			LEAR				0156.7	0158.2	1				CONT
			LEAR				0220.4	0229.2	1				CONT
			PALE				0224.4	0321.1	1				S
			CULG	0224.5	0225	2							IIIG
			CULG				0229		2				IIIB
			CULG				0230.5		2				IIIB
			LEAR				0230.6	0233.8	2				CONT
			CULG				0328	0329	1				DP
			CULG				0337	0337.5	2	0337.5	0338	1	IIIG
			PALE				0337.1	0351.8	1				CONT
			LEAR				0337.2	0337.6	2				CONT
			LEAR				0349.0	0354.6	1				CONT
			CULG				0351.5		2	0351.5		1	IIIB
			CULG	0359	0416								IS,W
			LEAR				0504.7	0504.9	1				III
			LEAR				0515.8	0519.3	1				CONT
			LEAR				0538.3	0538.6	1				CONT
			LEAR				0552.0	0552.5	1				CONT
			CULG	0615	0621								IN,W
			CULG				0618.5	0619	1				IIIG,Z
			LEAR				0618.5	0811.5	1				B
			CULG				0621	0623.5	2				IIIG,Z
			CULG				0622.5	0647	3			II	HB
	0630	1637	WEIS				0630.8	0646.1	2			II	HARM
			LEAR				0631.0	0631.5	3				CONT
			LEAR				0631.7	0639.5	2				CONT
			CULG				0640	0715				IV	W
			CULG	0706	0743								IN,W
			WEIS				1049.6	1052.4	3				IIIGG
			WEIS				1250.4	1250.6	2				U
	1345	2400	HARV				1345	1651	1				IN
			WEIS				1406.2	1406.3	1				IIIB
			WEIS				1409.7	1409.9	1				IIIB
			HARV	1427	1756	1							IN
			HARV				1521	1900	1				IIIN
			WEIS				1537.9	1538.0	1				IIIG
			HARV	1558	1559	3	1558	1601	3	1559	1600	2	IIIGG
			WEIS				1558.5	1601.2	3				IIIGG
			SGMR				1558.9	1559.7	1				CONT
			WEIS				1603.6	1603.7	3				IIIB
			HARV				1604		3	1604		2	IIIB
			HARV				1616	1617	3				IIIG
			WEIS				1616.0	1616.9	1				IIIG
			HARV				1651	2020	3				I
			HARV				1716	1720	3	1716	1719	2	IIIGG
			HARV				1731	1733	2	1731	1733	2	IIIG
			HARV	1756	2046	3							I
			HARV	1857		2	1852	1858	3	1852	1858	2	IIIGG
			HARV				2020	2200	2				IN
			HARV	2046	2400	2							IN
	2043	2400	CULG	2124	2400								IS,W
			HARV				2200	2400	3				I
			CULG	2247	2250	2	2247	2249	2	2248	2249	1	IIIGG
			HARV	2247	2252	3	2247	2252	3	2251		2	IIIGG
			PALE				2248.0	2253.2	2				CONT
			LEAR				2248.1	2252.1	1				CONT
			CULG	2250.5	2252	1	2250	2253	3	2250	2251.5	1	IIIGG
			CULG				2300.5	2301	1	2300.5		1	IIIG
			LEAR				2300.6	2300.7	1				III
			PALE				2300.6	2300.9	1				III
			HARV				2301		3				IIIG
08	0000	0740	CULG	0000	0740								IS,W
			CULG				0319.5		1	0319.5		2	IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
08			LEAR				0622.3	0624.2	1				CONT
			CULG				0622.5	0623	1				IIIB
			CULG				0623.5	0624	2				IIIG
			LEAR				0806.4	0806.6	1				CONT
	0628	0815	WEIS				0808.9	0809.3	2				IIIG
			LEAR				0809.0	0809.3	1				CONT
	0840	1550	WEIS				0907.2	0908.9	2				IIIG
	1345	2400	HARV	1346	2400	2							I
			HARV				1346	1856	2				IN
			HARV				1355	1356	3				IIIG
			HARV				1408		3				IIIG
			HARV				1416	2129	2	2129		2	IIIN
			HARV				1644		3				IIIG,U
			HARV				1837		3				IIIG
			HARV				1856	2000	3				I
			HARV				1939		3				IIIB
			HARV				2000	2400	2				IN
	2043	2400	CULG	2046	2400								IN,W
			CULG	2120		3							IIIB
			HARV	2120	2121	3	2120	2121	3				IIIG
			CULG	2121	2121.5	1							IIIG
			CULG				2124	2302					IIIN,W
			CULG				2129		2				IIIB
09	0000	0743	CULG	0000	0228								IN,W
			CULG	0228	0743	1							IS,DC
			CULG				0343	0640					IN,W
			CULG				0640	0743					IS,W
	0712	0720	WEIS				0712	1538	2				IN
			CULG				0735						IIIB,W
			CULG				0738.5						IIIB,W
	0745	1630	DWIN	0843.5	0844.2	2							IIIG
	0740	1640	WEIS	0843.9	0844.1	2							IIIG
	1345	2400	HARV				1345	1920	2				I
			HARV	1353	2400	2							I
			HARV	1846	1847	3							IIIG
			HARV				1920	2400	3				IC
			HARV				2012		1				IIIB
			CULG				2043	2400					IIIN,W
	2043	2400	CULG	2043	2400	1	2043	2400	1				IS,C
			CULG				2140		1				IIIB
			CULG	2216.5		2							IIIB
			HARV	2217		3	2217		3				IIIB
10	0000	0742	CULG	0000	0205								IS,W
			CULG				0000	0107	1				IS,C
			CULG				0000	0742					IIIN,W
			CULG	0102.5	0103.5	2							DCIM
			CULG				0107	0400					IS,W
			CULG	0205	0742	1							IS
			CULG	0330.5			0330.5						IIIB,W
			CULG	0352			0352						IIIB,W
			CULG				0435.5	0437	1				IIIG
			LEAR				0435.8	0437.0	1				CONT
			CULG				0549	0558	1				II
			LEAR				0552.3	0553.5	1				CONT
			CULG	0621.5		2							IIIB
			LEAR				0636.7	0637.0	1				V
	0624	0839	WEIS				0831.4	0832.9	3				IIIG
	0752	1640	DWIN	0831.5	0833.8	2							IIIG
	0842	1641	WEIS										
			DWIN	1011.5	1014.1	1							IV
	1330	2400	HARV				1351	2400	2				I
			HARV				1423	2019	2				IIIN
			BLEN	1511.8	1512.0	1							DCIM
	1420	1616	BLEN	1514.2	1515.8	1	1514.2	1515.8	1				IIIG
			BLEN				1518.5	1616 D	1				I
			DWIN	1611.6	1612.1	2							IIIG
			HARV				1721	1723	3				IIIGG,U
			HARV				1953	1954	3	1953	1954	2	IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
10	2042	2400	CULG	2055	2400		2059	2400					IS,W
			CULG				2111	2112.5					IIIG,W
			LEAR				2223.9	0130.0	1				B
			CULG				2305.5	2312	1				UNCLF
			HARV				2344	2351	2				IIIGG
			CULG				2344	2347					IIIG,W
11	0000	0742	CULG	0000	0742		0000	0016					IN,W
			CULG	0009.5	0014.5		0009.5	0016					IIIGG,W
			PALE				0012.0	0012.7	2				CONT
			CULG				0013	0013.5	3				IIIG
			LEAR				0013.1	0014.1	2				CONT
			CULG	0121.5	0122	2							IIIG
			LEAR				0203.9	0213.9	1				CONT
			CULG				0205	0206	1				IIIG
			CULG	0411.5	0412	1							IIIG
			CULG	0610.5	0614.5	2							IIIN
	0622	0735	WEIS										
			CULG				0656.5						IIIB,W
	0655	1620	BLEN	0723.8	0724.5	1							IIIG
			BLEN	0737.5	0743.4	2	0737.5	0743.4	2				IIIG
			CULG	0737.5			0737.5						IIIB,W
	0726	1643	WEIS				0742.2	0743.4	2				IIIG
	0615	1640	DWIN	0743.0	0743.5	2							IIIG
			BLEN	0831.4	0831.6	2	0831.4	0831.6	2				IIIG
			WEIS				0831.6	0831.8	2				IIIG
			DWIN	0948	1005	1							IV
			BLEN				1035.4	1043.0	2				IIIGG
			WEIS				1036.6	1037.7	2				IIIG,DCIM
			WEIS				1040.7	1042.9	2				IIIG
			BLEN	1113.0	1113.0	1							IIIB
			BLEN	1132.2	1132.9	2							IIIG
			WEIS	1132.7	1132.9	2							U
			DWIN	1144.5	1145.2	2							IIIG
			BLEN	1145.0	1145.3	1							DCIM
			BLEN	1238.7	1238.9	1							IIIG
			BLEN	1310.5	1313.6	1	1310.5	1313.6	1				IIIG
			BLEN				1352.7	1352.9	1				IIIB
			WEIS				1352.8	1352.9	1				IIIB
	1329	2350	HARV				1353		2				IIIG
			BLEN				1431.7	1431.9	1				IIIG
			WEIS				1431.7	1431.9	2				IIIG
			HARV				1432		2				IIIG
			HARV				1554	1555	2				IIIB
			WEIS				1554.5	1554.8	2				IIIG
			HARV	1750	1751	2	1749	1752	3				IIIGG
			HARV	2241	2244	2	2241	2244	3				IIIG
	2042	2400	CULG	2241	2241.5		2241	2241.5					IIIG,W
12	0000	0742	CULG	0244.5		1							IIIB
			CULG				0529.5						IIIB,W
			LEAR				0530.7	0536.3	1				CONT
			CULG				0534	0540					IIIS,W
	0620	0722	WEIS										
	0615	1205	DWIN	0653.7	0654.1	2							IIIG
	0650	1625	BLEN	0654.8	0655.1	1							IIIG
			BLEN				0910.2	0910.5	1				IIIG
	0725	1644	WEIS				0910.4	0910.6	1				IIIG
			WEIS				1011.3	1011.8	1				IIIB
			WEIS				1013.7	1013.9	1				IIIG
			DWIN	1157.7	1158.6	2							IIIG
			BLEN	1157.9	1216.2	2	1157.9	1216.2	1				IIIGG
			WEIS				1157.9	1158.3	1				IIIG
			WEIS				1200.1	1200.4	2				IIIG
	1235	1650	DWIN										
	1330	2400	HARV	1341	1342	2	1341	1344	3				IIIGG
			BLEN				1341.3	1342.5	2				IIIGG
			WEIS				1341.4	1342.2	2				IIIG
			HARV	1447	1448	1	1447	1448	2				IIIG
			WEIS				1447.3	1447.9	2				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
12			HARV				1524	1526	1				IIIG
			HARV				1747	1750	2				IIIG
			HARV				1821		2				IIIG
			HARV				1841		3				IIIB,U
			HARV				1845		3				IIIB
			HARV	2019		2	2019		2				IIIG
	2042	2400	CULG				2240	2242.5	1				IIIG
			HARV				2241	2246	2				IIIGG,U
			HARV				2244	2256	3			II	
			CULG				2244.5	2246					IIIG,W
			CULG				2245	2257	1			II	
			HARV				2302		1				IIIG
			CULG				2351						IIIB,W
13	0000	0738	CULG				0011						IIIB,W
			CULG	0030.5	0031	2	0030.5	0031	1				IIIG
			CULG				0054.5						IIIB,W
			CULG				0301	0530	1				IIIN
			LEAR				0301.5	0301.7	1				V
			CULG	0323.5	0324		0323.5	0324					IIIG,W
			LEAR				0348.8	0349.0	1				V
			LEAR				0405.3	0405.5	1				V
			LEAR				0424.0	0428.6	1				CONT
			CULG	0424.5	0425	2	0424	0425	3	0424	0425	2	IIIG
			LEAR				0441.3	0441.6	1				V
			LEAR				0458.8	0501.2	1				CONT
			LEAR				0526.1	0529.7	1				CONT
			LEAR				0555.3	0556.1	1				CONT
	0616	1413	WEIS				0650.3	0650.4	1				IIIB
			CULG				0650.5						IIIB,W
			WEIS				0653.6	0655.6	2				IIIG
			CULG	0654	0655.5	1	0653.5	0655.5	1				IIIG
	0650	1625	BLEN	0654.0	0655.7	2	0654.0	0655.7	2				IIIG
			CULG	0707.5	0708	1	0707.5		1				IIIG
			BLEN				0707.7	0707.7	2				IIIB
			WEIS				0707.7	0707.8	1				IIIB
			BLEN				0842.3	0844.8	2				IIIG
			WEIS				0842.5	0842.9	2				IIIG
			BLEN				1043.9	1044.2	2				IIIG
			WEIS				1044.0	1044.4	2				IIIG
	0740	1650	DWIN	1059.1	1059.7	2							IIIG
			BLEN	1059.3	1059.6	2							IIIG
			BLEN				1159.0	1200.3	2				IIIG
			WEIS				1159.0	1159.4	2				IIIG
			BLEN	1211.7	1211.8	2							IIIG
			DWIN	1211.7	1211.8	2							IIIG
			WEIS	1256.7	1256.8	1							IIIB
			WEIS				1259.7	1259.9	1				IIIB
	1332	2400	HARV				1341	1552	1				IN
			HARV				1438		1				IIIB
			HARV	1459		1	1459		3				IIIG
			BLEN				1459.1	1459.3	1				IIIG
			SGMR				1459.2	1459.6	1				V
			HARV				1506		2				IIIB
			HARV				1552	2400	3				I
			HARV	1601		1	1601		3	1601		3	IIIG,V
			BLEN				1601.2	1601.4	2				IIIB
			SGMR				1601.3	1601.6	1				V
			HARV				1605		3	1605		3	IIIG
			HARV				1840		2				IIIG
			HARV				1855		2				IIIB
			HARV				1913		2	1913		2	IIIB
			PALE				1913.1	1913.3	1				V
			HARV	2011	2012	2							IIIG
			HARV				2026	2027	3	2026	2027	2	IIIG
			PALE				2026.2	2026.5	1				V
			HARV	2035		2							IIIG
	2043	2400	CULG				2043	2400					IS,W
			CULG				2055	2225					IIIN,W
			CULG				2055.5	2058	1				SLOW DRIFT

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
13			CULG	2058.5	2059	1	2058.5	2059.5	3				IIIG,V,Z
			HARV	2059		1	2059		3	2059		3	IIIGV
			HARV				2134		1				IIIG,U
			PALE				2158.9	2159.1	2				III
			CULG				2233.5	2234	1				IIIG
			HARV				2234		2				IIIG
			CULG				2234.5	2235.5	1				IIIG,Z
			CULG							2313	0500	1	SWF
			CULG	2334	2400								IN,W
			HARV	2335		2	2335		2				IIIG
14	0000	0742	CULG				0000	0742					IS,W
			CULG	0241.5	0242		0241.5	0242					IIIG,W
			CULG	0314		1							IIIB
			CULG	0401		1							IIIB
			CULG				0421	0429	1				IIIS
			LEAR				0425.0	0427.3	1				CONT
			CULG	0434			0434						IIIB,W
			LEAR				0503.4	0503.6	1				III
			CULG				0503.5	0504	1				IIIG
	0616	0635	WEIS										
			CULG				0636	0715	1				N,DC
			LEAR				0742.3	0743.0	1				CONT
	0647	1647	WEIS				0744.4	0744.9	1				IIIG
			WEIS				0813.2	0815.1	2				IIIG
	0610	1650	DWIN	0813.5	0813.7	2							IIIG
	0645	1630	BLEN	0813.6	0814.2	2							IIIG
			DWIN	0827.3		1							IIIB
			WEIS				0837.9	0838.2	2				IIIG
			LEAR				0838.1	0838.4	1				CONT
			BLEN	0852.5	0853.7	1							DCIM
			WEIS				0859.3	0859.4	1				IIIB
			WEIS				0909.3	0910.3	1				IIIG
			WEIS				0915.9	0916.1	1				IIIB
			WEIS				1026.0	1026.3	2				IIIG
			DWIN	1117.0	1117.9	2							IIIG
	1331	2400	HARV	1338	2400	2	1332	2400	2				I
			BLEN	1342.6	1344.3	1							IIIG
			HARV	1343	1346	2	1343	1346	2				IIIG
			HARV	1358	1401	2							IIIG
			WEIS				1416	1623	1				IN
			BLEN	1548.9	1549.0	2							IIIB
			HARV	1549		3							IIIG
			HARV	1606	1607	1							IIIG
			DWIN	1631.4	1632.4	1							IIIG
			HARV	1632		2							IIIG
			HARV	1819	1823	2							IIIG
			HARV	2018	2019	3							IIIG
			HARV	2039		1	2039		2				IIIG
	2042	2400	CULG	2042	2400		2042	2400					IN,W
			CULG				2051	2157					IIIN,W
			HARV	2220	2221	2							IIIG
			CULG							2349	2400	1	SWF
15	0000	0741	CULG	0000	0741								IN,W
			CULG	0242	0242.5	1							IIIG,U
			CULG	0327	0327.5		0327						IIIG,W
			CULG				0404	0553					IIIN,W
			CULG				0404	0614					IS,C,W
			CULG				0415	0555	1				IS,C
			CULG				0457		1				IIIB
			CULG	0532	0538.5	1							IIIN
	0640	1013	BLEN	0809.2	0809.9	2							IIIG
			BLEN	0954.8	0957.8	2	0954.8	0957.8	3				IIIGG
	0614	1613	WEIS				0954.9	0957.7	2				IIIG,RS
	1610	1710	DWIN	0955	0959	2							IIIG
	1331	2350	HARV				1332	1840	2				I
			HARV	1337	2342	2							IIIN
			DWIN	1337.1		1							IIIB
			HARV				1345	1346	2				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			WEIS				1345.3	1346.7	2				IIIG
			SGMR				1346.3	1346.6	1				CONT
			HARV	1409	1410	3							IIIG
			DWIN	1409.7	1410.1	1							IIIG
			HARV	1438	1439	2	1438	1439	2				IIIG
			WEIS				1532.2	1532.5	2				IIIG
	1618	1649	WEIS				1619	1629	1				I
			DWIN	1702.6	1703.0	2							IIIG
			HARV	1703	1706	3							IIIGG
			HARV	1828	1829	3							IIIG
			HARV	1834	1835	3							IIIG
			HARV				1840	2245	1				IN
	2042	2400	CULG				2112.5						IIIB,W
			HARV				2314		3				IIIG
			CULG	2314		1	2314		1				IIIB
			PALE				2314.2	2314.5	1				III
			CULG	2326.5	2327.5	1							IIIG
			HARV	2327		2	2327		2				IIIG
16	0000	0741	CULG				0139						IIIB,W
			CULG	0203	0217	1							IIIN
			CULG				0204.5	0205					IIIB,W
			CULG	0210.5	0212.5	2	0211	0212.5	1				IIIG
			CULG	0215	0216.5	1							REVERSE SD
			CULG				0216	0216.5	1				IIIG
			CULG				0350	0350.5					IIIB,W,U
			CULG				0355		1				IIIB
			CULG	0410	0427	1							IIIN
			CULG	0556	0600								IN,W
			CULG				0648	0741	1				IS
			CULG				0722	0741	1				SCINT
			LEAR				0814.1	0818.3	1				CONT
	0732	1700	DWIN	1028.5	1034.0	1							IIIG
	1331	2400	HARV	1350		2							IIIG
			DWIN	1350.1	1350.5	2							IIIG
	1115	1640	BLEN	1350.1	1350.6	1							DCIM
	0612	1651	WEIS				1403.8	1405.4	2				IIIG
			BLEN	1403.8	1404.2	2							IIIG
			HARV	1404	1405	3	1404	1405	3				IIIG
			HARV				1455	1456	1				IIIG
			BLEN				1456.0	1456.1	1				IIIB
			HARV				1902	1903	3				IIIG
			HARV				2019		3				IIIB
			HARV				2117		2				IIIG
			HARV	2124		2	2124		3				IIIG
	2041	2400	CULG				2158	2210					IIIN,W
			HARV				2159	2202	3	2220	2202	2	IIIGG
			CULG				2200	2213					IS,W
			PALE				2200.0	2201.5	2				V
			CULG	2200.5	2201	1	2200	2202	3				IIIGG
			HARV				2206	2208	2				IIIG
			CULG				2207.5		1				IIIB
			HARV	2258	2259	1	2258	2259	1				IIIG
			CULG	2258	2258.5								IIIG,W
			HARV	2339	2340	3	2337	2340	3				IIIG
			CULG	2339	2340	2	2339.5	2340	1				IIIG
			CULG	2340	2340.5	1							IIIG
17	0000	0741	CULG				0413.5	0414	1				IIIG
			LEAR				0413.5	0414.0	1				CONT
			CULG				0617	0617.5	2				IIIG
			LEAR				0617.3	0617.8	1				V
			LEAR				0741.5	0742.1	1				CONT
	0610	1505	WEIS				0741.5	0742.1	2				IIIG
	0605	1700	DWIN	0945.6	0946.6	1							IIIG
			DWIN	1118.6	1119.1	2							IIIG
			WEIS				1122.3	1122.5	2				IIIG
			DWIN	1458	1504	2							IV Z
	0635	1640	BLEN	1458.0	1503.2	3							DCIM
	1514	1652	WEIS										

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
17	1331	2400	HARV				1918		2				IIIG
	2041	2400	CULG										
18	0000	0740	CULG	0036	0037	1							IIIG
			CULG	0227	0740								IN,W
			CULG				0242.5	0243	1				IIIG
			CULG	0444	0444.5	2	0444	0445	1				IIIG
			LEAR				0444.5	0444.6	1				III
			LEAR				0635.9	0637.7	1				CONT
	0607	1653	WEIS				0635.9	0637.7	2				IIIG
			CULG				0636		1				IIIB
			CULG				0637.5		1				IIIB
			WEIS	0948.8	0949.2	2							IIIG
	0630	1645	BLEN	0948.9	1949.3	3							IIIG
			BLEN				1055	1640 D	1				I,DC
	0600	1700	DWIN	1359.8		1							IIIB
			DWIN	1410.0		2							IIIB
	1555	2400	HARV				1600	2040	2				I
			HARV	1700	2255	1							I
			HARV				1736	2258	2	1736	1954	2	IIIN
			HARV				2040	2200	3				I
	2042	2400	CULG				2042	2200					IS,W
			HARV				2200	2400	1				IN
			CULG				2200	2400					IN,W
			CULG	2246	2334								IN,W
19	0000	0740	CULG	0357.5	0358		0358	0358.5					IIIG,W
			CULG	0413	0740								IS,W
			CULG				0449	0622					IN,W
			CULG				0505.5						IIIB,W
	0605	1335	WEIS				0608	1621	2				IS
	0625	1645	BLEN				0625 E	1645 D	3				I,DC
	0753	1700	DWIN	0857.8	0858.7	1							IIIG
			DWIN	0859.8	0900.1	2							IIIG
			WEIS				1133.8	1133.9	1				IIIB
	1338	1656	WEIS				1135.7	1136.6	1				IIIB
			WEIS				1156.9	1158.2	2				IIIG
			WEIS				1204.5	1205.8	1				IIIG
			BLEN	1225.8	1228.4	2	1225.8	1234.6	2				IIIGG
			WEIS				1225.8	1228.3	2				IIIG
			WEIS				1234.5	1234.7	2				IIIG
	1331	2400	HARV				1331	2400	3				IC
			HARV				1524	2006	2				IIIN
			WEIS				1524.1	1524.2	1				IIIB
			WEIS				1605.3	1625.6	1				IIIGG
			HARV	1908		1	1907	1909	2				IIIG
			HARV	1912	1913	3	1912	1913	3				IIIG
			HARV	1913		1	1913		1	1913		1	IIIG
	2040	2400	CULG				2040	2400	1				IS,C,DC
			HARV	2049	2051	2	2049	2051	2				IIIG
			CULG				2049	2400					IIIN,W
			CULG	2110	2400								IN,W
			HARV	2257	2331	3							I
			CULG				2337		1				IIIB
20	0000	0740	CULG				0000	0740					IS,W
			CULG	0000	0129								IN,W
			CULG	0129	0215	1							IS
			CULG	0215	0740								IS,W
			CULG				0222	0730	1				IIIN
			CULG				0240	0740					IIIN,W
			CULG				0327	0328	1				IIIG
			CULG	0336	0337	1	0335	0337	2				IIIG,V
			CULG				0534	0535	2	0534	0534.5	1	IIIB,V
			CULG				0537	0539	3	0537	0538	2	IIIG,V
	0603	1656	WEIS				0606	1656	3				IS
	0620	1650	BLEN				0620 E	1650 D	3				I,DC
			WEIS				0629	1655	2				IIIS
	0600	1700	DWIN	0714.1		1							IIIB
			WEIS				0716	0722	3				IIIGG

SOLAR RADIO EMISSION
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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
20			CULG				0716.5		3				IIIB
			CULG	0718.5		1	0718	0719.5	3				IIIGG
			CULG				0726.5		2				IIIB
			WEIS				0726.6	0726.8	2				IIIG
			WEIS				0728.7	0729.4	2				IIIG
			DWIN	0907.0	0910.5	1						IV	F
			WEIS				0934.3	0940.6	3				IIIGG
			BLEN				0934.8	0935.3	3				IIIG
			WEIS				1102.3	1104.8	3				IIIGG
			WEIS				1110.6	1113.5	3				IIIG/V
			WEIS				1138.9	1139.1	3				IIIB
			BLEN				1138.9	1138.9	2				IIIB
			WEIS				1141.6	1141.9	2				IIIG
			WEIS				1149.3	1149.9	3				IIIG
			BLEN	1158.4	1111.9	2	1158.4	1111.9	3				IIIGG
			WEIS				1255.4	1255.7	3				IIIG
			HARV	1331	2340	2							I
	1331	2400	HARV				1331	2400	3				IC
			HARV	1343	1346	2	1343	1346	2				IIIGG
			HARV	1443	1456	3	1443	1452	3	1450		2	IIIGG,V
			WEIS				1443.3	1445.9	3				IIIG
			DWIN	1443.5	1451.0	1							CONT
			BLEN	1443.6	1452.3	3	1443.6	1452.3	3				UNCLF
			WEIS				1447.5	1454.1	3				IIIGG
			WEIS				1449.0	1453.7	3				DCIM
			DWIN	1521.1	1526.0	1						IV	
			HARV	1525	1715	2	1522	2310	2				IIIN
			BLEN	1534.7	1541.2	2	1539.3	1545.9	2				IIIGG
			WEIS				1538.7	1545.9	3				IIIGG
			DWIN	1540.9	1541.0	2							IIIG
			HARV	1541	1544	2	1539	1546	3				IIIGG
			HARV	1732	1739	2	1732	1739	3	1733	1739	3	IIIGG
			HARV				1747		3	1747		3	IIIG
			HARV	1802	1812	3	1802	1812	3				IIIGG
			HARV				1829	1904	3	1829	1901	3	IIIS
			HARV	1956	1959	3	1956	2000	3	1956	2000	3	IIIGG,V
			HARV				2000	2020	3	2000	2020	2	IIIS
	2040	2400	CULG	2040	2400		2040	2249					IS,W
			CULG				2040	2249					IIIN,W
			CULG				2059.5		1				IIIB
			CULG				2249	2400	1				IS,DC
			CULG				2249	2310					IIIS,W
			HARV	2256	2305	3	2256	2306	3	2257	2259	2	IIIGG
			CULG	2257	2259.5	2	2256.5	2300	2				IIIGG
			CULG				2300.5	2301.5	1				IIIG
			CULG				2310	2400					IIIN,W
			CULG				2348.5	2349.5	2				IIIG
			HARV				2349	2352	3				IIIGG
			CULG				2350.5	2351	1				IIIG
21	0000	0739	CULG	0000	0739		0000	0618					IS,W
			CULG				0027	0124					IIIN,W
			CULG				0029.5	0030	1				IIIG
			CULG	0121	0213								IIIN,W
			CULG				0124	0148	1				IIIS
			CULG				0129.5	0130	3				IIIB,U
			LEAR				0132.4	0209.5	1				B
			CULG				0148	0739					IIIN,W
			CULG	0232		1	0232.5		2	0232.5		1	IIIB
			CULG	0234.5	0235	1	0234.5	0235	2	0234.5	0235	1	IIIG
			CULG				0235	0739	1				IIIN
			LEAR				0241.3	0248.2	1				CONT
			CULG	0309	0735	2							DCIM,CONT
			CULG	0344	0344.5	3	0343.5	0344.5	3	0344	0344.5	2	IIIG
			CULG				0355.5	0356.5	2				IIIG
			LEAR				0424.0	0513.2	1				S
			CULG				0432		2				IIIB
	0601	1156	WEIS				0600	1658	2				IS
	1310	1658	WEIS				0622	1658	3				IIIN
			LEAR				0622.6	0623.1	1				CONT

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
21			WEIS				0632.4	0638.9	3				IIIGG
			LEAR				0632.4	0642.3	2				CONT
			CULG	0634.5	0638	1	0635	0638	3				IIIGG
	0600	1700	DWIN	0647	0653	2						IV	
			WEIS	0647.2	0651.7	2							DCIM
			LEAR				0657.8	0709.3	2				CONT
			WEIS				0657.9	0657.9	2				IIIG
			WEIS				0700.9	0701.7	2				IIIG
			CULG				0701		3				IIIB
			CULG				0708.5	0709	2				IIIG
			WEIS				0708.9	0709.0	2				IIIG
			DWIN	0710.5	0710.7	1							IIIG
			LEAR				0717.5	0717.9	1				CONT
			DWIN	0719.7	0735.0	2						IV	F
			WEIS	0719.8	0727.7	2							DCIM
			WEIS				0807.7	0808.3	2				IIIG
			WEIS				0810.4	0810.7	2				IIIG
			DWIN	0940.8	0950.9	1						IV	
			WEIS				1019.9	1027.7	3				IIIGG
			WEIS				1031.9	1038.4	3				IIIGG
			WEIS				1132.9	1141.3	3				IIIGG
			SGMR				1133.0	1133.2	1				III
			SGMR				1139.4	1139.5	1				III
			WEIS				1145.2	1145.4	2				IIIG
			DWIN	1155.4	1157.6	1						IV	
			DWIN	1217.5	1219.6	1						IV	P
			DWIN	1256.3	1256.7	1						IV	F
			SGMR				1259.2	1302.2	3				V
			DWIN	1259.5	1300.0	3							IIIG
			WEIS				1330.9	1335.6	3				IIIGG
	1331	2400	HARV				1331	1900	3				IC
			HARV				1331	1335	3				IIIGG,V
			SGMR				1332.7	1335.4	2				CONT
			WEIS				1338.6	1341.1	1			II	
			HARV				1339	1342	3				UNCL
			HARV	1343	2125	2	1343	2339	2				IIIN
			DWIN	1346.5	1347.0	2							IIIG
			HARV				1413	1420	2				IIIGG
			SGMR				1413.4	1418.7	1				CONT
			WEIS				1413.4	1414.3	3				IIIG
			WEIS				1417.4	1419.7	3				IIIG
			WEIS				1435.5	1440.9	3				IIIGG
			HARV				1436	1440	3	1437		2	IIIGG,V
			SGMR				1436.8	1438.3	3				V
			SGMR				1439.2	1440.5	1				CONT
			HARV				1453	1457	3				IIIGG
			DWIN	1455.5	1455.7	1						IV	
			WEIS				1503.9	1515.4	3				IIIGG
			SGMR				1503.9	1506.0	3				CONT
			HARV	1504	1518	2	1504	1519	3	1504	1515	2	IIIGG
			SGMR				1507.6	1508.6	1				CONT
			SGMR				1526.6	1527.0	1				CONT
			HARV	1603	1628	3	1603	1628	3	1604	1628	3	IIIS,V
			DWIN	1604.5	1604.9	2							IIIG
			WEIS				1608.7	1619.4	3				IIIGG/V
			SGMR				1609.2	1615.7	2				CONT
			DWIN	1610.5		2							IIIB
			DWIN	1612.0	1617.1	2							IIIG
			SGMR				1627.7	1628.0	1				CONT
			WEIS				1641.6	1646.8	3				IIIGG
			SGMR				1641.8	1656.1	2				CONT
			HARV	1642	1647	2	1642	1647	3	1642	1643	3	IIIGG
			HARV	1654	1704	2	1654	1701	3	1656		3	IIIG
			WEIS				1655.7	1656.3	3				IIIG
			SGMR				1710.8	1744.0	2				S
			HARV	1712	1714	3	1712	1714	3	1712	1714	3	IIIGG
			HARV	1721	1722	3	1719	1726	3	1719	1724	2	IIIGG
			HARV	1739	1740	3	1736	1758		1736	1758		IIIS
			HARV	1741	1800	2						IV	
			HARV	1801	1802	3	1801	1804	3				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
21			HARV				1819		2	1819		2	IIIG
			HARV	1828		1	1825	1828	3	1825		2	IIIG
			HARV	1841	1842	3	1841	1842	3				IIIG
			HARV				1900	2400	3				I
			HARV				1952	1953	3	1952	1953	2	IIIG
			HARV	2008	2018	2	2007	2018	3	2010	2018	2	IIIGG
			HARV	2032	2034	3	2032	2034	3				IIIG
	2039	2400	CULG	2039.5	2400	1							IIIN
			CULG	2040	2400								IS,W
			CULG				2040	2400					IIIN,W
			HARV				2058	2059	3	2058	2059	3	IIIG,V
			CULG				2058	2059	2				IIIG,U
			CULG				2102.5	2103	3				IIIB
			HARV				2103	2104	3	2103	2104	3	IIIG
			CULG				2104	2328	1				IIIN
			CULG				2137	2138	2				IIIG,U
			HARV	2141	2143	3	2137	2143	3	2137	2143	2	IIIGG
			CULG	2141	2143	2	2141	2143	1				IIIGG
			HARV	2147	2154	2	2147	2154	3				IIIGG
			CULG	2153	2153.5	2	2153.5		2				IIIG
			HARV	2208		1	2208	2210	3				IIIG
			HARV	2240		2	2240	2244	3				IIIGG
			HARV				2253		3				IIIG
			LEAR				2314.8	2315.8	1				CONT
			CULG				2315	2315.5	1				IIIB,U
			LEAR				2327.9	2328.3	1				CONT
			HARV	2328	2329	2	2328	2329	3				IIIG
			LEAR				2341.8	2342.4	1				CONT
			CULG	2342	2342.5	1	2342	2342.5	2	2342	2342.5	1	IIIG,U
			HARV	2342		1	2342		3				IIIG
22	0000	0739	CULG	0000	0739								IS,W
			CULG				0009	0242					IN,W
			LEAR				0030.5	0124.5	1				S
			CULG				0035	0739					IIIN,W
			CULG	0038	0041.5	1							DCIM
			CULG	0044	0046	2	0044	0046	2				IIIGG
			CULG				0057	0739	1				IIIN
			CULG				0100		1	0100		1	IIIB
			CULG				0133		3				IIIB,V
			CULG							0143	0305		IIIN,W
			CULG				0202.5	0203.5	3	0202.5	0203.5	2	IIIG,V,U
			CULG				0204.5	0205.5	3	0204.5	0205	3	IIIG,V
			CULG				0206	0206.5	3	0206	0206.5	2	IIIG
			CULG				0210.5		2	0210.5		1	IIIB
			CULG				0248	0248.5	2	0248	0248.5	1	IIIG
			CULG	0321.5	0322.5	1	0321.5	0323.5	3	0322	0323.5	2	IIIGG,U
			WEIS				0606.3	0611.8	3				IIIGG
			CULG	0607	0609	1	0606	0609.5	3				IIIGG
			CULG	0611.5		1	0610.5	0611.5	3				IIIGG
	0600	1659	WEIS				0614	1658	1				IN
			WEIS				0615	1656	2				IIIN
	0600	1700	DWIN	0636.1	0638.1	1						IV	F
			WEIS				0642.2	0646.3	3				IIIGG,U
			CULG				0642.5	0644	3				IIIG,V
			CULG				0700.5	0701.5	1				SLOW DRIFT
			CULG	0702	0706	1							IIIN
			WEIS				0702.0	0702.7	3				IIIG
			CULG				0705	0705.5	2				IIIG
			WEIS				0705.5	0705.9	3				IIIG
			WEIS				0752.4	0753.3	3				IIIGG
			WEIS				0810.5	0814.9	3				IIIGG
			WEIS				0844.0	0844.2	3				IIIG
			WEIS				0855.7	0858.8	3				IIIGG
			WEIS				0926.7	0927.2	3				IIIG
			WEIS				1002.7	1004.7	3				IIIGG,RS
			WEIS				1011.7	1012.3	3				IIIG
			WEIS				1013.5	1016.0	3				IIIG
			WEIS				1018.2	1020.2	3				IIIG
			DWIN	1059.8	1100.1	1							IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22			WEIS				1142.3	1146.2	3				IIIGG
			WEIS				1149.6	1153.6	3				IIIGG
			WEIS				1206.3	1206.9	3				IIIG,RS
			WEIS				1235.7	1236.9	3				IIIGG
			HARV				1333	2235	3	1613	1923	2	IIIN
	1318	2410	HARV	1340	2100	2	1318	2405	3				I
			WEIS				1412.8	1414.7	3				IIIGG
			HARV				1413	1415	3				IIIG
			HARV				1430	1443	3				IIIGG
			WEIS				1430.6	1433.7	3				IIIGG/V
			WEIS				1501.9	1502.8	3				IIIG
			HARV	1502	1513	3	1502	1517	3				IIIGG
			WEIS				1505.3	1511.1	3				IIIGG
			HARV				1632	1710	3	1633	1656	2	IIIGG
			DWIN	1647.5	1650.5	1						IV	
			HARV	1650	1704	2	1702	1704	2			IV	N
			HARV	1729	1749	3	1717	1750	3	1717	1750	3	IIIS,V
			HARV	1737	1749	3						2	UNCL
			HARV	1811	1812	2	1811	1812	3	1811		2	IIIGG
			HARV	1826	1827	2	1823	1829	3	1823	1829	3	IIIGG
			HARV	1902	1903	3	1902	1904	3	1903	1904	3	IIIG
			HARV	1931	2003	3	1931	2003	3	1931	2003	3	IIIS,V
			HARV	2008	2011	3	2008	2014	3	2009	2014	3	IIIGG
			HARV				2022	2024	3	2024		3	IIIG
	2039	2400	CULG	2039	2400								IS,W
			HARV	2039	2040	3	2038	2040	3				IIIGG
			CULG	2039	2400	1	2039	2400	1				IIIN
			CULG				2039	2400					IN,W
			CULG				2040	2400					IIIN,W
			HARV	2046	2047	3	2046	2047	3	2047		2	IIIGG
			CULG				2046.5	2047.5	2				IIIG
			HARV				2135		3	2135		2	IIIG
			CULG	2141.5	2142	2	2141.5	2142	2				IIIG
			HARV	2142	2154	3	2142	2154	3	2142	2146	3	IIIGG,V
			CULG	2142.5	2145	2	2142.5	2146.5	3	2144	2144.5	1	IIIGG,V
			HARV	2158	2203	3	2158	2204	3	2200	2203	3	IIIGG,V
			CULG	2200	2203	2	2159.5	2204	3				IIIGG,V
			CULG				2251.5	2254	1				UNCLF
			LEAR				2252.0	2253.6	1				CONT
			HARV	2253	2254	1	2252	2254	3				IIIGG
			LEAR				2306.0	2307.8	2				CONT
			CULG	2306.5	2307	2	2306	2308	3	2306.5	2307	1	IIIGG,V
			HARV	2307		1	2306	2307	3	2306	2307	2	IIIGG,V
			HARV	2326	2331	3	2326	2331	3				IIIGG
			CULG	2326	2328	2							IIIGG
			LEAR				2330.4	2331.1	1				CONT
			LEAR				2341.5	2344.1	2				CONT
			CULG				2341.5	2344.5	3	2341.5	2344	3	IIIGG,V
			HARV				2342	2349					IIIGG,V
			LEAR				2347.9	2349.5	1				CONT
			CULG				2349	2349.5	2	2349		1	IIIG
			CULG				2352	2355.5	3	2353.5	2355	3	IIIGG,V
			LEAR				2352.4	2355.5	2				CONT
			CULG							2353.5	2400	2	SWF
			CULG				2355.5	2400	1			II	
			HARV				2356	2405	3			II	
			LEAR				2356.0	0002.3	2				CONT
			HARV	2359	2402	3	2352	2403	3				IIIGG
			CULG	2359.5	2400	1	2358.5	2400	3	2359	2400	2	IIIGG
23			CULG							0000	0005	2	SWF
	0000	0730	CULG				0000	0007	1			II	
			CULG				0000	0001.5	2	0000	0001	2	IIIG,V
			CULG	0001	0002	1	0002		1				IIIG
			CULG	0009	0730								IN,W
			CULG				0030	0410	1				IIIN
			CULG				0037	0646		0044.5	0110		IIIN,W
			CULG	0108	0315	1							IIIN
			LEAR				0154.2	0156.3	1				CONT
			LEAR				0208.5	0209.5	2				V

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
23			CULG				0209	0210	3	0209	0210	2	IIIG
			LEAR				0222.4	0222.7	1				CONT
			LEAR				0301.0	1016.0	1				B
			CULG	0310.5	0312	2	0311	0313.5	3	0311	0313	1	IIIGG
			LEAR				0311.0	0312.8	2				CONT
	1058	1700	WEIS				0628	1648	1				IIIN
			WEIS				0644.7	0703.8	3				III/V,GG
			LEAR				0645.8	0703.2	3				S
			CULG				0646	0649.5	3				IIIGG,V
			CULG				0646	0730	1				IIIN
			CULG	0653	0653.5	2	0653	0654	2				IIIG,V
			CULG	0655.5	0657.5	1	0655.5	0658.5	3				IIIGG,V
	0557	1052	WEIS				0659	1643	1				IN
			CULG	0700	0701	1	0700.5	0703.5	1				IIIGG,V
			CULG	0702.5	0704	1							CONT
			WEIS				0705.9	0710.3	2			II	HARM
			CULG				0706	0726	1			II	
			WEIS				0728.5	0734.5	1			II	
			WEIS				0806.3	0809.4	3				IIIGG,DCIM
			LEAR				0808.0	0809.5	2				CONT
			WEIS				0812.4	0816.4	3				IIIG/U
			WEIS				0839.8	0840.1	3				IIIB
			WEIS				0848.2	0848.4	2				IIIG
			WEIS				0920.6	0928.3	2				IIIG
			WEIS				1009.6	1029.4	3				IIIGG
	0723	1700	DWIN	1101.2	1102.5	2							IIIG
			WEIS	1101.3	1102.6	2							DCIM
	1103	1650	BLEN				1103 E	1320	1				I
			BLEN	1108.2	1128.3	2	1108.2	1128.3	2				IIIGG
			DWIN	1108.2	1110.5	2						IV	P
			WEIS				1108.3	1109.9	2				DCIM
			WEIS				1112.8	1116.6	2			II	HB
			DWIN	1121.5	1127.0	1							IIIG
			WEIS				1122.1	1129.2	2				IIIGG
			SGMR				1126.7	1127.0	2				V
			DWIN	1203	1210	1						IV	
			WEIS				1203.2	1214.7	3				III/V,GG
			SGMR				1203.7	1212.0	3				V
			BLEN	1203.8	1210.0	3	1203.3	1211.7	3				IIIGG
			SGMR				1229.4	1229.8	1				III
			SGMR				1239.5	1240.1	1				V
			BLEN	1253.3	1254.2	1							DCIM
			DWIN	1253.4	1254.4	2							IIIG
	1319	2400	HARV	1342	2400	2	1319	2400	3				I
			HARV				1429	2351	2	1551	2353	2	IIIN
			SGMR				1429.4	1440.1	1				III
			SGMR				1439.5	1440.1	1				V
			SGMR				1539.0	1539.6	1				V
			BLEN	1642.6	1642.7	1							IIIG
			HARV				1735	1741	3	1735	1740	3	IIIGG,V
			HARV				1747	1750	2	1747	1750	2	IIIGG
			SGMR				1849.8	1850.1	1				V
			HARV				1901	1902	3	1901	1902	3	IIIB,V
			SGMR				1901.3	1901.6	1				V
			HARV	1928	1929	2	1928	1929	2	1929		2	IIIG
	2040	2400	CULG				2040	2132					IS,W
			CULG				2054	2400	1				IIIN
			CULG				2115.5	2118	3				IIIGG,V
			HARV				2116	2121	3	2116	2118	3	IIIGG,V
			CULG	2120.5		1							IIIB
			CULG	2145	2223								IS,W
			CULG	2253		1	2253		3				IIIB
			CULG				2300.5	2302.5	3				IIIG,V
			HARV				2301	2302	3	2301	2302	2	IIIG,V
			CULG	2302.5	2303	1							IIIG
			HARV	2313	2314	1	2313	2314	3				IIIG,U
			CULG	2313.5		1	2313	2313.5	2				IIIG
			CULG				2320.5	2321.5	2				IIIG
			HARV				2321		3				IIIG
24	0000	0738	CULG	0000	0430								IN,W

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
24			CULG				0017	0738					IIIN,W
			CULG				0102	0712	1				TYIN
			CULG							0158	0206	1	SWP
			CULG	0202	0202.5								IIIG,W
			CULG	0204.5	0205.5	1	0204.5	0205.5	3				IIIG
			CULG				0206.5	0207.5	3				IIIG,V
			CULG	0206.5	0207	1							UNCLF
			CULG				0214	0603	2				IIIN
			LEAR				0214.4	0306.7	1				S
			CULG				0259.5		3				IIIB
			CULG	0430	0738								IS,W
			CULG	0431.5	0432	2	0431.5	0434	3	0432	0433.5	2	IIIG,V
			CULG	0432	0432.5	1							UNCLF
			LEAR				0529.5	0529.7	1				V
			LEAR				0536.5	0537.4	1				CONT
			CULG	0537.5	0538	1	0537	0538	3				IIIG,U
			CULG	0541	0542.5	1							DCIM
			LEAR				0542.0	0543.1	2				CONT
			CULG	0542.5	0543	2	0543	0543.5	3	0543		1	IIIG
	0555	1700	DWIN										
			CULG	0558	0650	1							IIIN
			WEIS				0600.3	0603.6	3				IIIG
			LEAR				0600.3	0603.7	3				CONT
			CULG				0600.5	0601.5	3				IIIG,V
	0555	1701	WEIS				0621	1632	1				IN
	0615	1655	BLEN	0624.8	0625.8	1							IIIG
			BLEN	0649.8	0650.2	1							IIIG
			WEIS				0710	1701	1				IIIN
			LEAR				0710.8	0711.5	1				CONT
			LEAR				0717.7	0718.4	2				CONT
			CULG	0718	0718.5	1	0717.5	0719.5	3				IIIG,V
			BLEN	0718.3	0718.5	1	0717.8	0718.2	1				IIIG
			BLEN				0736.8	0739.3	1				IIIG
			BLEN	0838.4	0838.4	1							IIIB
			BLEN				0905	1530	1				I
			LEAR				0906.3	0921.6	1				S
			BLEN				0912.8	0921.5					IIIG
			WEIS				0921.4	0921.7	2				IIIG
			WEIS				1012.7	1013.6	2				IIIG
			BLEN				1058.3	1103.9	1				IIIG
			WEIS				1103.5	1104.3	2				IIIG
			BLEN				1128.1	1137.4	2				IIIGG
			WEIS				1129.1	1132.9	3				IIIGG,RS
			SGMR				1132.4	1132.5	1				III
			WEIS				1137.0	1137.2	2				IIIG
			BLEN				1212.0	1217.2	1				IIIG
			SGMR				1232.4	1232.5	1				III
			BLEN				1237.2	1300.5	3				IIIGG
			WEIS				1238.3	1240.2	3				IIIG,DCI?
			SGMR				1239.3	1245.5	2				V
			WEIS				1243.9	1245.8	3				IIIGG
	1318	2345	HARV				1318	2144	3				IIIN
			BLEN				1318.2	1319.7	1				IIIG
			SGMR				1339.0	1342.0	1				CONT
			HARV	1346	2000	2	1318	2000	3				I
			BLEN				1353.7	1415.2	2				IIIG
			HARV				1354	1400	3				IIIGG
			WEIS				1356.2	1357.6	2				IIIGG
			SGMR				1356.2	1356.5	2				V
			BLEN				1435.3	1448.6	2				IIIGG
			HARV				1438	1449	3				IIIGG
			SGMR				1438.2	2000.0	1				B
			WEIS				1438.3	1440.3	2				IIIGG
			WEIS				1442.4	1442.7	2				IIIG
			WEIS				1517.6	1518.2	2				IIIG/U
			HARV	1526	1527	2	1518	1605	3	1535	1548	3	IIIGN
			WEIS				1526.2	1526.4	2				IIIG
			BLEN				1526.2	1541.1	2				IIIGG
			WEIS				1534.3	1535.7	3				IIIGG
			WEIS				1537.3	1538.3	3				IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
24			WEIS				1540.7	1541.0	2				IIIG/U
			BLEN				1552.5	1604.8	2				IIIG
			BLEN				1629.4	1629.4	1				IIIB
			BLEN				1646.9	1652.8	2				IIIGG
			HARV	1649	1650	3	1647	1702	3	1650	1700	2	IIIGG
			WEIS				1649.2	1649.4	2				IIIG
			HARV	1715		1	1713	1715	3				IIIGG
			HARV	1730	1734	3	1730	1734	3	1730	1733	3	IIIGG
			HARV				1739	1746	3	1739	1743	3	IIIGG
			HARV	1807	1811	2	1805	1812	3	1807	1812	3	IIIGG,V
			SGMR				1810.9	1812.2	2				V
			HARV				1854	1855	3	1854	1855	3	IIIG
			HARV	2000	2345	1	2000	2345	3				IN
			HARV				2009	2010	3	2010		2	IIIG
			HARV				2023	2024	3	2023	2024	2	IIIG
	2039	2400	CULG	2039	2400								IS,W
			CULG				2042	2146					IIIS,W
			CULG				2044		3				IIIG
			CULG				2046	2148	2				IIIN
			CULG				2047.5	2049	3				IIIG
			HARV	2053	2054	2	2044	2054	3	2058		3	IIIGG
			CULG	2058	2400	1							IIIN
			HARV	2112	2122	2	2110	2122	3	2120	2122	3	IIIGG
			CULG				2113.5	2114	3				IIIG
			CULG	2121	2122	2	2120	2122	3				IIIGG
			HARV	2127		1	2127		3				IIIG
			HARV				2135	2136	3	2136		2	IIIGG
			CULG				2135	2136	3				IIIG
			HARV				2147	2148	3				IIIG
			CULG				2240	2400					IIIN,W
			HARV	2307	2308	1	2307	2308	3				IIIGG
			LEAR				2307.4	2307.6	1				III
			HARV				2322	2326	3				IIIGG
			LEAR				2322.8	2325.8	1				CONT
			HARV	2337	2343	3	2337	2343	3				IIIGG
			CULG	2340	2341.5	2	2340	2341.5	3				IIIG
			LEAR				2340.1	2343.2	2				CONT
			CULG	2342	2343	3	2342	2343	3				IIIG
			LEAR				2348.3	2352.5	2				CONT
25	0000	0738	CULG	0000	0139								IN,W
			CULG				0004	0729	1				IIIN
			CULG				0006	0738					IIIN,W
			LEAR				0028.4	0029.3	2				CONT
			CULG				0029		2				IIIB
			LEAR				0050.8	0052.2	3				CONT
			CULG				0051	0052.5	3	0051	0051.5	2	IIIG,V
			CULG	0109	0729	2							IIIN
			CULG	0133.5	0137	2	0135.5	0137	3				IIIG,V
			LEAR				0135.7	0137.2	2				CONT
			CULG	0139	0457								IS,W
			LEAR				0145.6	0146.1	1				CONT
			LEAR				0201.6	0203.6	2				CONT
			CULG	0202	0203	2	0201.5	0202.5	3				IIIG
			CULG	0204.5	0205.5	3	0204.5	0205.5	1				IIIGG
			LEAR				0213.2	0304.9	1				S
			CULG				0248	0252.5	2				IIIGG
			LEAR				0248.3	0252.5	2				CONT
			CULG	0304	0304.5	2	0304	0305	2				IIIG
			LEAR				0308.4	0815.5	2				CONT
			CULG				0308.5	0313.5	3	0309	0313	1	IIIGG
			CULG	0422	0422.5	2	0422	0422.5	2				IIIG
			LEAR				0430.0	0430.7	2				CONT
			CULG	0457	0620	1							IS,DC
			LEAR				0527.6	0534.1	1				CONT
			LEAR				0549.2	0606.1	1				S
			CULG	0558	0559	3	0558	0559.5	2				IIIG,V
	0851	1704	WEIS				0558.1	0559.9	3				IIIG,DCIM
	0558	1655	BLEN	0558.2	0628.4	2	0558.2	1628.4	3				IIIGG
	0551	0848	WEIS				0600	1628	2				IIIN

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
25			CULG				0606		2				IIIB
			CULG	0620	0738								IS,W
			LEAR				0628.4	0701.5	1				S
			BLEN	0655.1	0728.9	3	0655.1	0728.9	3				IIIGG
	0550	1700	DWIN	0711.5	0711.7	2							IIIG
			CULG	0711.5		3	0711.5		3				IIIB
			WEIS				0711.6	0711.9	3				IIIG
			LEAR				0711.6	0714.6	2				CONT
			LEAR				0723.5	0725.0	1				CONT
			WEIS				0743.3	0753.7	2				IIIGG
			BLEN	0745.5	0826.3	3	0743.8	0812.2	3				IIIGG
			LEAR				0748.9	0803.3	1				S
			WEIS				0801.6	0803.7	3				IIIGG/U
			WEIS				0809.3	0811.3	2				IIIGG
			LEAR				0809.3	0811.2	2				CONT
			BLEN	0822.7	0826.4	2							IIIG
			BLEN	0826	1655 D	1	0826	1655 D	1				I,DC
			LEAR				0833.1	0837.7	2				CONT
			LEAR				0846.6	0848.5	2				CONT
			BLEN				0846.7	0847.2	2				IIIG
			BLEN	0914.8	0922.4	1							IIIG
			BLEN	0932.9	0943.9	3	0932.9	0943.9	3				IIIGG,V
			WEIS				0932.9	0934.3	3				IIIGG
			LEAR				0932.9	0934.3	2				CONT
			LEAR				0936.5	0937.8	3				CONT
			WEIS				0936.5	0938.9	3				IIIGG,DCIM
			BLEN	1012.1	1115.7	1	1012.1	1115.7	2				IIIGG
			WEIS				1024.3	1027.9	3				IIIGG
			WEIS				1030.3	1032.7	3				IIIGG
			WEIS				1050.4	1051.1	3				IIIG
			WEIS				1053.8	1054.8	3				IIIGG
			SGMR				1127.2	1142.0	1				CONT
			BLEN	1127.2	1147.5	3	1127.2	1147.5	3				
			WEIS				1127.3	1129.2	3				IIIGG
			WEIS				1131.6	1133.1	3				IIIGG
			WEIS				1136.4	1139.6	3				IIIGG
			WEIS				1141.6	1142.3	3				IIIGG
			BLEN	1250.2	1313.9	2	1223.8	1314.2	3				IIIGG
			WEIS				1251.8	1254.7	3				IIIGG
			WEIS				1306.4	1310.0	3				IIIGG
			SGMR				1306.4	1307.5	2				CONT
			WEIS				1313.4	1314.3	3				IIIG
			SGMR				1313.9	1314.1	2				III
	1319	2400	HARV				1319	2200	3				IC
			HARV				1328	2326	2	1456	2021	2	IIIN
			HARV	1339			1339		3				IIIG
			BLEN				1358.9	1359.2	2				IIIG
			SGMR				1420.3	1500.1	2				S
			BLEN				1420.3	1429.5	2				IIIG
			WEIS				1420.4	1422.7	3				IIIG
			HARV	1422		3	1420	1422	3	1422		2	IIIG
			WEIS				1428.6	1429.9	3				IIIG
			HARV				1429	1430	3				IIIG
			HARV	1458	1459	2	1458	1501	3	1459		2	IIIGG
			WEIS				1458.1	1459.9	3				IIIGG
			BLEN				1458.2	1459.5	2				IIIG
			BLEN	1515.5	1550.3	3	1523.1	1550.3	2				IIIGG
			HARV	1523		3	1523		3	1523		2	IIIG
			WEIS				1523.2	1523.5	3				IIIG
			SGMR				1523.2	1523.4	2				III
			HARV	1536		3	1536		3				IIIG
			WEIS				1536.3	1536.6	3				IIIG
			SGMR				1543.3	1543.5	1				III
			HARV	1550		3	1550		3				IIIG
			WEIS				1550.3	1550.4	3				IIIG
			BLEN	1618.8	1639.1	2	1618.8	1627.4	2				IIIG
			SGMR				1623.2	1627.5	1				CONT
			HARV	1626	1627	2	1624	1627	3	1624	1627	2	IIIG
			HARV				1714	1715	3	1714	1715	2	IIIG
			SGMR				1714.3	1715.0	1				CONT

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
25			HARV				1731	1732	3	1731	1732	3	IIIG
			SGMR				1732.7	1747.4	1				CONT
			HARV				1738	1740	2	1738	1740	2	IIIG
			HARV	1812		3	1812		3				IIIG
			HARV	1828		3	1828		3				IIIG
			SGMR				1834.8	1835.1	1				III
			HARV				1835		3	1835		3	IIIG
			HARV	1921	1925	2	1921	1928	3	1921	1928	3	IIIGG,V
			SGMR				1921.2	1923.3	2				CONT
			SGMR				1925.3	1925.5	1				III
			CULG				2038	2400	1				IS
	2038	2400	CULG	2038	2400								IS,W
			HARV				2042	2104	3	2052	2100	3	II
			CULG	2042.5	2048.5	3	2042.5	2107	3				II HB
	2038	2400	CULG				2043	2315	1				IIIN
			HARV				2044	2051	3	2047	2051	2	IIIG
			CULG				2046.5	2048	2				IIIG,Z
			CULG				2050	2210	1				IV
			HARV				2105	2109	2	2105	2109	2	IIIG
			CULG				2109	2109.5	2				IIIG
			HARV				2120	2122	2	2120	2122	2	IIIG
			CULG				2120.5		2				IIIB
			HARV				2200	2400	3				I
			HARV	2204	2217	2	2204	2207	3				IIIG
			CULG	2206.5	2207	2	2206.5	2207	2				IIIG
			HARV				2316	2317	3				IIIG
			LEAR				2316.1	2316.7	1				CONT
			CULG	2316.5	2317	1	2315.5	2317	3	2316.5	2317	1	IIIG,V,U
26			CULG				0000	0738					IIIN,W
	0000	0738	CULG	0000	0738		0000	0504					IN,W
			CULG				0008.5		1				IIIB
			LEAR				0140.5	0152.2	1				S
			CULG				0140.5	0141	1				IIIG
			CULG				0152		1	0152		1	IIIB
			CULG				0254		1				IIIB
			LEAR				0335.8	0336.0	1				V
			CULG				0336		1	0336		1	IIIB
			LEAR				0640.3	0641.5	1				CONT
	0600	1700	BLEN				0710.5	0718.5	3				IIIGG
			LEAR				0710.7	0715.3	2				CONT
			CULG	0711	0715.5	2	0710.5	0715.5	3				IIIGG
			LEAR				0735.8	0736.2	1				CONT
			CULG				0736		2				IIIB
			BLEN	0823	1530	3	0823	1530	3				I,DC
			WEIS				0857	1625	2				IIIN
	0759	1706	WEIS				0921	1524	3				IS,DC
			LEAR				0927.3	0928.5	1				CONT
			LEAR				0936.3	0938.5	1				CONT
			WEIS				0936.3	0939.1	3				IIIG
	0600	1700	DWIN	0937.4	0937.9	1							IIIG
			WEIS				1023.9	1025.9	3				IIIGG
			SGMR				1041.0	2000.0	1				B
			WEIS				1120.8	1132.0	3				IIIGG
			BLEN				1120.8	1130.5	3				IIIGG
			DWIN	1123.9	1124.5	1							IIIG
	1319	2400	HARV				1319	2120	3				I
			HARV				1324	2344	2	1529	1949	2	IIIN
			DWIN	1444.5	1445.2	1							IIIG
			BLEN	1444.7	1449.7	1							IIIG
			HARV	1445		3	1444	1448	2				IIIGG
			WEIS				1539.9	1544.4	3				IIIGG
			BLEN				1540.0	1544.3	2				IIIGG,V
			HARV	1544		1	1540	1544	3	1540	1544	3	IIIGG
			HARV				1623	1625	3	1623	1625	2	IIIG
			BLEN				1623.0	1624.5	1				IIIG
			HARV	1727		3	1727		3	1727		3	IIIG
			HARV				1802	1806	2	1802	1806	2	II GG
			HARV				1816	1822	3	1816	1822	3	IIIGG
			HARV				1827	1832	3	1827	1832	2	IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26			HARV				1912	1916	3	1912	1914	2	IIIG
			SGMR				1937.7	1941.0	2				V
			HARV	1938	1942	3	1934	1942	3	1934	1941	3	IIIGG
			HARV				1940	1948	2				UNCL
			HARV				2031	2034	3	2031		3	IIIGG
	2038	2400	CULG	2038	2400								IN,W
			CULG				2038	2400					IS,W
			CULG	2047.5	2050.5	2							DCIM
			HARV	2048	2050	3	2048	2050	3				IIIG
			CULG				2103	2400					IIIN,W
			HARV				2120	2400	2				IN
			HARV				2145	2147	3				IIIG
			CULG				2145.5		1				IIIB
			CULG				2203.5			2203.5			IIIB,W
			CULG	2344		1	2344	2345	1	2344.5	2345	1	IIIG
			LEAR				2344.3	2344.8	1				CONT
27	0000	0738	CULG	0000	0738		0000	0110					TN,W
			LEAR				0010.4	0011.1	1				CONT
			CULG				0010.5	0011	1	0010.5	0011	1	IIIG
			CULG				0019	0245					IIIN,W
			CULG							0020	0100	1	SWF
			CULG	0058	0058.5	2							IIIG
			CULG	0133.5	0134								IIIG,W
			CULG				0245	0455	1				IS,C
			CULG				0245	0250	2	0245.5	0249.5	2	IIIGG
			CULG				0245	0356	1				IIIS
			LEAR				0245.2	0249.7	2				CONT
			LEAR				0250.4	0721.8	1				B
			CULG				0305.5		2				IIIB
			CULG				0356	0738					IIIN,W
			CULG				0403	0555	1				IIIN
			CULG				0427.5		1	0427.5		1	IIIB
			CULG				0535.5		1	0535.5		1	IIIB
	0545	1700	DWIN										
	0600	1241	BLEN				0610.9	0623.7	1				IIIG
			BLEN				0716.3	0716.5	2				IIIG
			LEAR				0716.4	0716.8	2				CONT
	0950	1707	WEIS				0716.4	0716.7	2				IIIG
			CULG				0716.5	0717	3				IIIB
			BLEN	0722.5	0722.7	1							IIIG
	0714	0947	WEIS				0803	1120	1				IN
			WEIS				0912.7	0912.9	2				IIIG
			BLEN				0917.2	0924.8	1				IIIGG
			WEIS				0917.3	0920.4	3				IIIGG
			LEAR				0917.6	0919.7	1				CONT
			WEIS				0923.1	0927.4	2				IIIG
			LEAR				0931.3	0940.1	1				CONT
			WEIS				0931.3	0931.9	2				IIIG
			BLEN	1025	1152	3	1025	1152	3				I,DC
			WEIS				1032.7	1032.9	1				IIIB
			WEIS				1034.9	1035.3	1				IIIG
	1319	2400	HARV				1319	1600	3				I
			HARV				1331	2202	2				IIIN
			WEIS				1333.6	1334.3	3				IIIG
			SGMR				1333.8	1334.0	1				V
			HARV	1334		1	1334		3				IIIG
			WEIS				1348.7	1349.6	1				IIIG
	1407	1650	BLEN				1407 E	1650 D	1				I,DC
			WEIS				1519.9	1520.4	2				IIIG
			HARV				1600	1900	2				IN
			WEIS				1611.3	1612.7	1				IIIG
			HARV							1751	2033	2	IIIN
			HARV				1900	2100	3				IC
	2037	2117	CULG	2037	2117	1	2037	2117	1				IS
			CULG				2037	2117					IIIN,W
			HARV				2042	2044	2	2042	2044	2	IIIGG
			CULG				2042.5	2044.5	2				IIIGG
			HARV				2100	2300	3				IC
			HARV				2136	2139	2	2136		1	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
27			HARV	2216	2256	2	2216	2300	2				IV
	2216	2400	CULG				2225	2346					IIIN,W
			CULG	2226	2325	1							IS,C
			CULG				2226	2325	1				IIIS
			CULG				2234	0010	1				IS,C
			CULG				2339.5	2341.5	2				IIIGG
			HARV				2340	2043	3				IIIG
			LEAR				2340.0	0631.0	1				B
			CULG				2343	2344	1				IIIG
28	0000	0735	CULG				0000	0716					IN,W
			CULG				0003.5	0006	2				IIIGG
			CULG	0042.5	0713	1							IN
			CULG				0123	0124	1				IIIG
			CULG				0159.5	0203					IIIG,W
			CULG				0202.5		2				IIIB
			CULG				0216.5	0218	1				IIIG
			CULG				0225	0226	1				IIIG
			CULG				0301	0302	1				IIIG
			CULG				0302	0325	1				IIIN
			CULG				0308.5	0309.5	1				IIIG
			CULG				0355.5		1				IIIB
			CULG	0413.5	0415	3	0413.5	0415	3	0413.5	0415	2	IIIGG,V
			LEAR				0413.5	0418.7	2				CONT
			CULG				0415	0420					IIIN,W
			CULG				0417	0419	2				IIIG
			CULG				0418.5	0421	1				POSS II
			CULG				0504.5		1				IIIB
			CULG				0553.5						IIIB,W
			CULG				0640	0719					IIIN,W
	0600	1650	BLEN	0641.3	0641.4	1							DCIM
			CULG				0641.5		1				UNCLF
			LEAR				0641.5	0641.6	1				III
			CULG				0720		1				IIIB
			BLEN	0741.4	0741.8	1	0741.4	0741.8	1				IIIG
	0541	1700	DWIN	1034.8	1034.9	1							IIIG
	0735	1711	WEIS				1040.6	1042.3	2				IIIGG
			WEIS				1050.2	1051.6	2				IIIG
			DWIN	1211.0	1211.5	1							IIIG
			BLEN	1211.0	1212.2	3							IIIG
			WEIS	1211.2	1211.4	2							IIIG
	1319	2400	HARV				1403	1640	2				IIIN
			WEIS				1502.2	1503.4	1				IIIG
			HARV	1507	1514	3	1507	1515	3	1513		2	IIIGG
			DWIN	1507.0	1514.0	1							IIIG
			BLEN	1507.2	1514.5	3	1507.2	1514.5	3				IIIGG,RS
			WEIS				1507.2	1515.2	2				IIIGG,RS
			SGMR				1507.5	1514.4	1				V
			HARV				1510	1515	3				UNCL
			HARV				1511	1855	2				IN
			BLEN	1544.4	1544.4	1							IIIB
			HARV	1623	1624	1	1623	1625	2				IIIGG
			BLEN	1639.5	1641.6	1							IIIG
			HARV				1900	2100	3				IC
			HARV	1920		1	1920		3	1920		3	IIIG
			HARV	1932	1933	3	1932	1933	3				IIIG
			CULG	2047.5	2048.5	1	2047	2049.5	2				IIIGG,V,U
			HARV	2048		3	2047	2049	3	2047	2049	2	IIIG
			CULG				2049.5	2318					IIIN,W
	2040	2400	CULG	2051	2215	1	2040	2400	1				IS,DC
			HARV				2100	2340	3				I
			HARV	2136	2137	3	2136	2140	3	2137	2137	2	IIIG
			CULG	2136	2137.5	1	2136	2137.5	2				IIIG,V,U
			CULG				2139	2140	1				IIIG,U
			CULG	2331.5	2332.5	1	2331.5	2332.5	1				IIIGG
			HARV	2332		3	2331	2333	3				IIIGG
			HARV				2337	2338	3				IIIG
			CULG	2337.5	2338	1							DCIM
29			CULG	0000	0730		0357	0602					IN,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
29	0000	0735	CULG	0104		1	0104	0104.5	2				IIIB,V
			LEAR				0104.2	0104.6	1				CONT
			CULG				0117	0720	1				IIIN
			CULG				0117	0720					IIIN,W
			LEAR				0153.7	0153.9	1				CONT
			CULG	0203	0203.5	1							DCIM
			LEAR				0222.8	0224.7	2				CONT
			CULG	0223.5	0224	1	0223	0224.5	3	0224	0224.5	1	IIIGG,V
			CULG	0227		1							DCIM
			LEAR				0253.6	0253.9	1				CONT
			LEAR				0406.2	0454.2	1				S
			CULG	0409.5	0421.5	1							N,DCIM
			CULG	0423.5		1	0423.5		3	0423.5		1	IIIB
			LEAR				0423.5	0423.8	2				CONT
			LEAR				0533.7	0542.3	1				CONT
			CULG	0534.5		1	0534.5		2				IIIB
	0555	1650	BLEN				0555 E	0600.0	3				I,DC
			LEAR				0637.8	0638.0	1				III
	0711	1022	WEIS				0716.2	0716.8	2				IIIG
			CULG	0716.5		1	0716.5		2				IIIB,U
			BLEN	0930.5	0931.2	2							IIIG
	0540	1700	DWIN	0930.6	0931.2	1							IIIG
	1030	1707	WEIS				0947.9	0949.3	2				IIIG
			BLEN	1054.0	1055.3	1							IIIG
			WEIS				1057.5	1058.5	2				IIIGG
			WEIS				1122.2	1222.6	1				IIIG
	1319	2400	HARV	1346	2348	1							IN
			WEIS				1411.9	1412.3	1				IIIB
			HARV				1807	1808	2	1807	1808	2	IIIG
			HARV				1848	2140	2				IN
	2037	2400	CULG	2040	2400								IN,W
			CULG	2043			2043	2044	1				IIIG
			HARV	2043		2	2043		2	2043		2	IIIG
			CULG				2103.5	2104	2				IIIG
			CULG				2104	2106					IIIG,W
			HARV				2104		3	2104		2	IIIG
			CULG				2107		1				IIIB
			CULG				2133.5		1				IIIB
			CULG				2207.5		1				IIIB
			HARV	2305		2	2305		2				IIIB
			HARV	2320	2322	1	2320	2321	3				IIIG
			CULG	2320.5	2321	1	2320.5	2321	1				IIIG
30	0000	0735	CULG	0000	0034	1							IS
			LEAR				0011.9	0012.2	1				CONT
			CULG				0012	0013.5	1				IIIG,U
			CULG							0015	0220	1	SWF
			CULG				0016	0059	1				IIIS
			CULG	0016	0115	1	0016	0115	1				CONT
			LEAR				0026.3	0118.5	1				S
			CULG				0115		1				IIIB
			CULG				0116.5	0117.5	1				IIIG
			CULG				0124	0129	1				IIIG
			CULG				0223.5	0723	1				IIIN
			LEAR				0224.5	0224.8	1				CONT
			CULG				0401	0402	2				IIIGG,V,Z
			LEAR				0401.5	0415.6	1				S
			CULG				0403	0403.5	1				IIIG,U,Z
			CULG	0409.5		1	0409.5	0410.5	2	0409.5		1	IIIG
			CULG				0450		2				IIIB
			LEAR				0454.9	0541.5	1				S
			LEAR				0611.0	0611.5	1				V
	0542	1710	WEIS				0611.0	0611.4	2				IIIG
			LEAR				0720.6	0723.1	2				CONT
			WEIS				0720.7	0725.2	2				IIIGG,RS
	0555	1650	BLEN				0723.1	0724.0	2				IIIG,RS
			WEIS				0805.8	0806.0	1				IIIB
	1008	1700	DWIN										
			BLEN	1022.4	1024.8	1							IIIG
			BLEN	1208.5	1208.7	2							IIIG,U

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
30			WEIS	1208.7	1208.8	1							IIIG
	1319	2400	HARV	1339	2238	2							IIIN
			HARV				1610	2144	2				IIIN
			HARV				1822		2	1822		2	IIIG
			HARV				1915	2332	2				IN
	2037	2400	CULG										
31	0000	0535	CULG	0152.5	0153	1							DCIM
			CULG				0433	0434.5	1				IIIG
			LEAR				0433.3	0437.5	1				CONT
			CULG				0436		1				IIIB
	0530	0733	WEIS										
	0544	0736	CULG										
	0700	1700	DWIN										
	0555	1655	BLEN	1236.2	1236.2	2							IIIB
	0743	1651	WEIS				1247.7	1248.6	2				IIIG
			WEIS				1301.3	1301.5	1				IIIB
			WEIS				1346.4	1346.7	1				IIIG
			WEIS				1407.6	1409.7	2				IIIGG
	1319	2400	HARV	1409		1	1408	1409	3				IIIG
			WEIS				1411.4	1411.7	1				IIIB
			HARV				1426	2035	2				IIIN
			HARV	1435		1							IIIG
			WEIS				1458.2	1459.3	1				IIIG
			WEIS				1543.7	1543.8	1				IIIB
			WEIS				1550.6	1551.4	2				IIIG
			HARV				1551	1554	2	1551	1554	1	IIIG
			WEIS				1553.7	1553.8	2				IIIG
			WEIS				1556.4	1556.6	1				IIIG
			HARV							1557	2035	2	IIIN
			WEIS				1606.6	1607.7	3				IIIG
			HARV				1607		3	1607		3	IIIG
			WEIS				1645.7	1646.7	3				IIIG
			HARV				1646	1651	3	1646	1647	3	IIIGG,U
			BLEN				1646.3	1650.5	2				IIIG
			WEIS				1650.3	1650.7	2				IIIG
			HARV	1706	1707	2	1706	1707	2				IIIG
			HARV	1904		2	1904		2				IIIG
	2038	2400	CULG				2115.5	2141.5					IIIN,W
			CULG	2117	2117.5	1	2117	2117.5	2				IIIG
			HARV				2117		3	2117		2	IIIG
			HARV	2129	2130	3	2129	2130	3				IIIG
			CULG	2129.5		1	2129.5	2130	2				IIIG
			CULG	2133.5	2134.5	1	2133.5	2134.5	2				IIIG

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

S = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES
(Neutron Monitors)

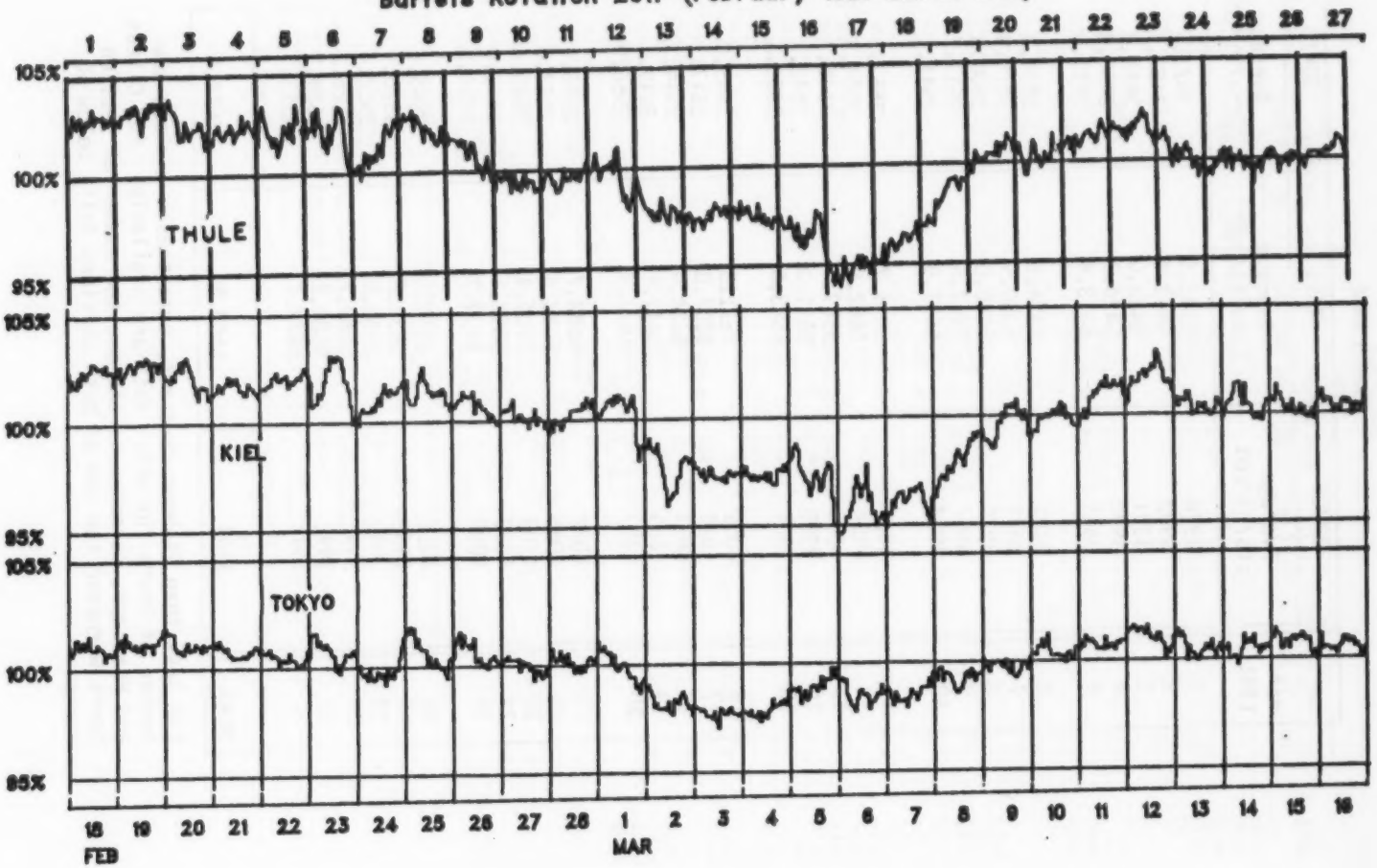
MARCH 1981

Mar 1981	THULE Average (cts/h)/100	KIEL Average (cts/h)/100	TOKYO Average (cts/h)/100
1	3976	5586.5	3523.5
2	3903	5542.0	3463.7
3	3891	5423.0	3445.8
4	3890	5420.3	3451.2
5	3858	5413.4	3489.0
6	3781	5334.5	3474.3
7	3829	5350.9	3475.9
8	3920	5450.0	3500.6
9	4007	5547.5	3517.7
10	4002	5557.9	3541.1
11	4035	5616.7	3552.5
12	4054	5662.9	3564.3
13	4003	5589.3	3545.7
14	3980	5591.0	3542.3
15	3984	5583.0	3553.5
16	4002	5591.5	3545.0
17	4023	5607.8	3547.7
18	4023	5634.0	3544.3
19	4069	5647.4	3549.1
20	4083	5677.9	3556.0
21	4082	5682.7	3555.5
22	4086	5710.4	3563.6
23	4103	5704.4	3565.6
24	4093	5692.6	3561.6
25	4099	5689.3	3554.8
26	4011	5566.5	3545.5
27	3982	5532.8	3520.9
28	3989	5552.6	3512.4
29	3997	5569.7	3526.2
30	3992	5583.8	3539.2
31	4041	5624.7	3553.1
MEAN	3993	5568.9	3528.4

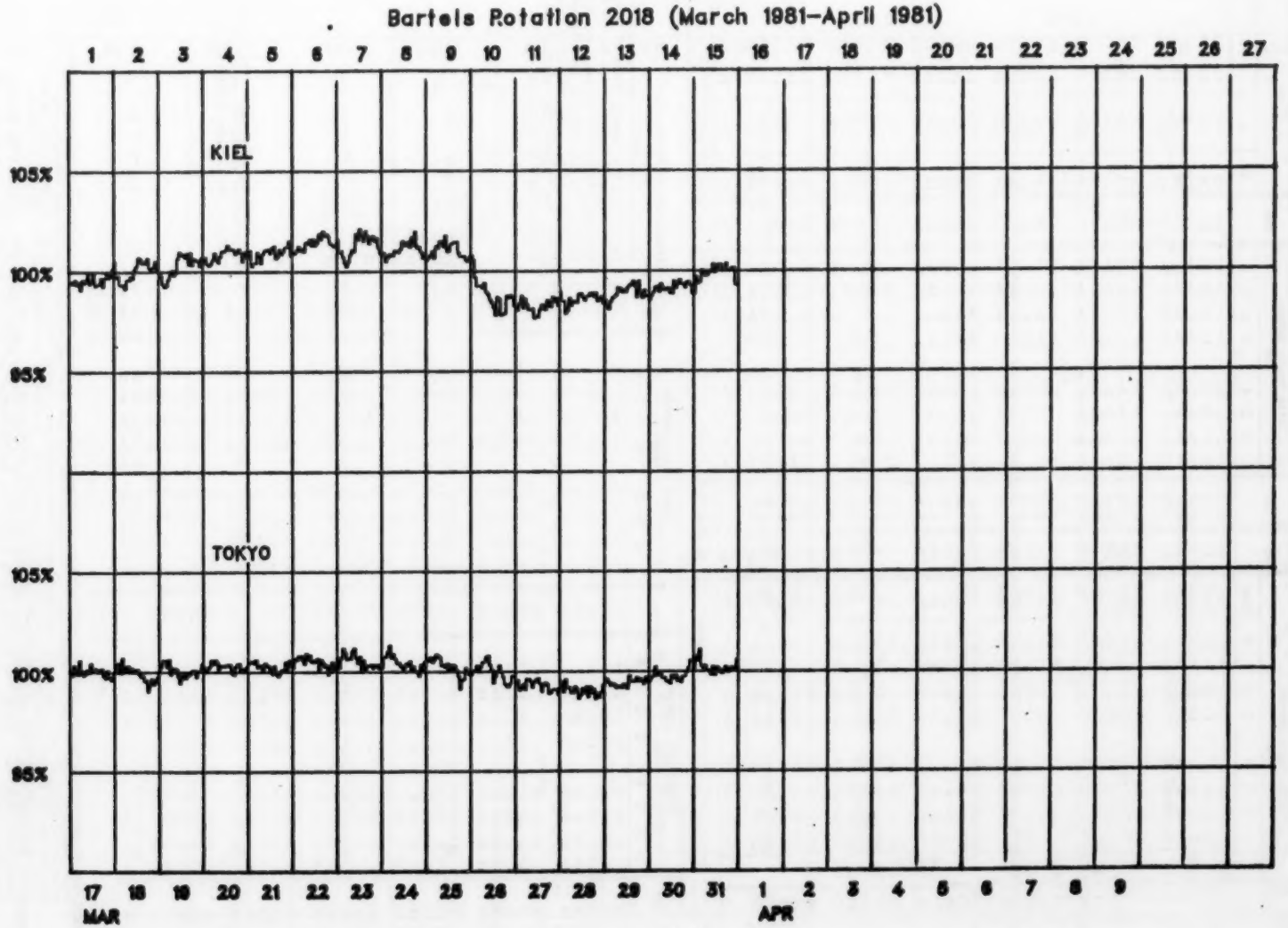
For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2017 (February 1981–March 1981)



COSMIC RAY INDICES
(Neutron Monitor)



GEOMAGNETIC ACTIVITY INDICES

MARCH 1981

Day	Three-Hourly Indices Kp									Ap	Cp	Three-Hourly Indices Km								Am	aa			
		1	2	3	4	5	6	7	8	Sum			1	2	3	4	5	6	7	8		N	S	M	
1	D4	4-	3	5-	4	5-	4-	2+	5	31	28	1.2	3-	2	4	4	5-	4-	3-	5-	46	45	45	47	43	
2		3+	4-	5	5	4	3+	3-	2-	29-	25	1.2	3+	3-	4+	5	4+	3-	3-	2-	43	38	50	53	36	
3	Q6A	2	1	1	1	1+	2+	3-	3	14+	8	0.4	1+	1-	1-	1-	1-	2	3-	3-	11	15	8	7	16	C
4		3	4	4	3-	1+	1	1-	2-	18+	12	0.7	2+	3-	3	3-	2-	2-	2-	2	18	16	15	24	8	
5	D1	1+	5+	6-	7-	7	7+	6+	4+	44	81	1.8	2-	5-	5	7-	7-	7-	6	5-	137	101	109	94	116	
6		3-	3+	3	2+	3	2	2	1	19+	11	0.6	3	3	3-	2+	3	2-	2	1+	21	18	17	19	16	
7		3-	2+	3-	4	4-	4+	5-	2+	27-	20	1.0	3-	2	3-	4-	4	4	4+	2+	37	25	46	31	41	
8		2+	2-	3-	4-	3+	2	1	0+	17	10	0.6	2+	1+	2+	3	3	2	1+	1-	17	15	16	18	13	
9	Q1	1	1-	1-	1	1	1	1	1+	8-	4	0.1	1-	0+	0+	1	1+	1-	1	1+	6	6	4	5	5	CK
10	Q8A	2-	2	2	3+	3-	2	1	1-	15+	8	0.4	2-	2-	1+	3	3	2+	2-	0+	15	14	22	23	13	K
11	Q5A	1+	2	2+	3-	2	2-	1+	0+	14-	7	0.3	1+	1+	2	2+	2+	2-	2-	0+	12	12	12	13	11	CK
12		1	0+	2+	3	2+	2	3+	4-	18	11	0.6	1-	1-	2+	3-	2+	2-	3	4-	20	20	22	15	28	
13	D5	3+	2+	3	3	4+	5-	5-	5+	31-	28	1.2	3	2+	2+	3	4+	4	4	5	46	48	42	24	65	
14	D2	3+	5-	6-	6-	6	5-	4+	3	37+	45	1.5	3	5-	5-	6-	6-	4+	4-	3	78	62	90	83	70	
15		3-	5-	3+	2	3	4	3+	3+	26+	19	1.0	3	4+	3-	2	3	4-	3+	3-	33	29	27	29	27	
16		3	3+	3-	2-	2+	3	3-	4-	22+	14	0.8	3	3-	2	2	2+	2+	3-	4	25	25	17	17	25	
17		5-	3	2+	3	3+	3	3	3+	26-	18	1.0	4	2+	2-	2+	3+	3-	3	3	28	38	21	29	30	
18		3	4-	4	3	4	4-	3+	2+	27	19	1.0	3-	3-	3	3-	3	4-	3	2+	28	28	32	31	29	
19	Q0A	2+	2	2	2	1+	3+	3+	2-	18	10	0.5	2-	1+	2-	2-	1+	3	3+	2-	17	15	13	11	17	
20	Q9A	1+	2+	2+	3-	3+	3-	1-	0+	16-	9	0.5	2	2	2	2+	3	3-	1-	0+	15	15	12	12	16	K
21	Q7A	0	1-	2	1+	1+	1	3+	3+	13	8	0.4	0+	1-	1+	1+	1	1	3+	3	12	15	7	6	16	KK
22	Q4	1-	2	1	1-	1-	1+	1+	2-	9+	4	0.2	1	1+	1-	0+	0+	1	1	1+	6	8	8	8	8	CK
23	Q2	0+	0+	1	2-	2	1	0+	0+	7	4	0.1	0+	0+	1+	2	1+	1	0+	0+	6	5	3	4	6	CC
24	Q3	0	0	1-	1	1	1+	2	2-	8-	4	0.1	0+	0	1-	1	0+	1	2+	2-	7	8	8	5	11	CK
25	D3	3+	5-	5-	2+	6-	5+	4+	4+	35-	36	1.4	3	3+	4	2+	5	5	4-	4+	54	52	40	31	61	
26		5	3+	3	3+	5	4+	3	4	31	28	1.2	5-	3-	2+	3	4+	3+	3-	4-	43	34	31	27	39	
27		3-	3+	3	2-	4-	3	3-	2+	22+	14	0.8	3-	3	3-	2-	3	3	3-	3	25	16	21	16	22	
28		3	3-	2	3-	3	3-	3-	3	22-	12	0.7	3-	2	2-	3-	3-	3-	3-	3+	22	19	18	14	23	
29		3-	3	4-	4	3+	4	3	2-	25+	18	1.0	3-	3-	3+	3+	3-	4-	3-	2-	28	28	33	32	29	
30		2+	2+	2	3-	3-	3-	4+	4+	23+	16	0.9	2+	2-	2-	2	3	3-	4-	4	27	32	19	12	39	
31		5+	4	2+	3+	3+	4+	4	4-	38+	26	1.2	4+	3+	2+	3-	3	3+	4-	4-	38	48	31	35	44	
									Mean		18	0.79									29.7	27.4	27.1	27.3		

Day	Three-Hourly Indices Kn								An	Three-Hourly Indices Ks								As
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1	3	2	4+	4+	5-	3+	2+	4+	47	3-	2-	4-	4-	4-	3-	5		46
2	3	3-	5-	5	5-	3-	3-	2-	44	4-	3-	4	5	4	3-	3-	2	42
3	1+	1-	1-	1	1+	2	3-	3-	12	1+	1-	1-	1-	0+	2	3-	3-	11
4	2+	3-	3	3	2	2-	2	2	19	2	3-	3	2	2-	2-	1+	2-	16
5	2-	5-	5-	7-	7-	7-	5+	4	123	2	5	5+	7-	7-	7	6+	5+	151
6	3	3-	3-	2+	3	2	2-	1	20	3-	3	3-	2+	3+	2-	2	2-	22
7	3-	2	3-	4-	4+	4-	4	2+	35	3	2	2+	4-	3+	5-	5-	2+	39
8	2	1	2+	3	3+	2	1+	1-	17	3-	2-	2+	3-	3-	2+	2-	1-	17
9	1-	0+	0+	1	1+	1	1+	2-	7	1	0+	1-	1	1+	1-	1	1+	6
10	1+	2-	2-	3-	3	2+	1+	0+	14	2-	2	1+	3	3-	2	2-	1-	16
11	1	1+	2+	3-	2+	2-	2-	0	13	2-	1+	2-	2	2+	2-	2-	1-	12
12	0+	0	2+	3	2+	2-	3	3+	19	1	1	2+	3-	2+	2-	3	4	21
13	3	2-	2+	3	4	4	4+	5-	43	3	3-	3-	3	4+	4	4	5+	49
14	3	4+	4+	6	6	4+	4	3-	79	3+	5	5	6-	5+	5-	4-	3+	76
15	3-	4+	2+	2	3	4	3+	3	35	3	4+	3	2	3	3+	3	3-	32
16	3	3	2+	2-	2+	2+	2+	4-	23	3+	3-	2	2	2+	2+	3	4+	27
17	4	3-	2-	2+	3	3-	3-	3+	28	4	2+	2-	2	4-	3-	3	3	29
18	2+	3-	3+	3	3+	4-	3+	2+	29	3	3	3-	3-	3	3+	3	3-	28
19	2-	1+	2-	2	1+	3-	3	2-	15	2	1+	2-	1+	1+	3	4-	2-	18
20	1+	2	2	3-	3	3-	1	0+	15	2+	2	2-	2+	3	3-	1-	0+	16
21	0	1-	1+	1+	1+	1+	3+	3	13	0+	1-	2-	2-	0+	0+	3	3	12
22	1	1+	1-	0+	0+	2-	1+	1+	7	1	1+	1-	1-	0+	0+	0+	1+	5
23	0+	0	1	2	2-	1+	0+	1-	7	0+	0+	2	2	1	1-	0	0	6
24	0+	0	0+	1+	1	1+	2+	2	8	0+	0+	1-	1-	0	1-	2+	1+	6
25	3-	4-	4-	2+	5	5	4	4	54	3	3+	4+	2	5-	5-	4-	4+	54
26	4+	3-	2+	3	4+	4-	3-	4-	40	5	3-	2+	3+	5-	3+	3-	4	45
27	2+	3	3-	2-	3+	3	3-	3-	25	3-	3-	3-	1+	3	3	3	3	25
28	2+	2	2-	3	3-	3-	3-	3	21	3	2	2	2	3-	3-	3	4-	23
29	2+	2+	3+	3+	3-	4-	3-	2-	27	3	3-	3+	3+	3-	4-	2+	2-	29
30	2	1+	2	2+	3	3-	4	4	27	3-	2-	2-	2-	3-	3-	4-	4+	27
31	4	3	3-	3	3	4-	4-	3+	37	5-	3+	2	3-	3-	3	4-	4	40
								Mean	29.1									30.5

ERRATA:

Conversion in 1979 to a new computer with a different word size caused values of indices aa to be truncated if they exceeded 99; the machine read and printed only the two least significant digits. Correct values of the affected indices are listed below. Both half-daily values are given, too, to make clear which of the two entries should be corrected.

Date	N	S	M
21 Feb 1979			66 102
10 Mar			54 101
25 Apr	109		27 148
26 Apr			103 15
13 Aug			53 108
20 Aug			33 100
29 Aug			59 111
18 Sep			100 63
25 Jul 1980			13 100
19 Dec	118	123	63 178
06 Feb 1981			24 116

NOTE:

aa Indices are provisional from 1 January 1981 until further notice, in connection with the change of the Southern Hemisphere observatory.

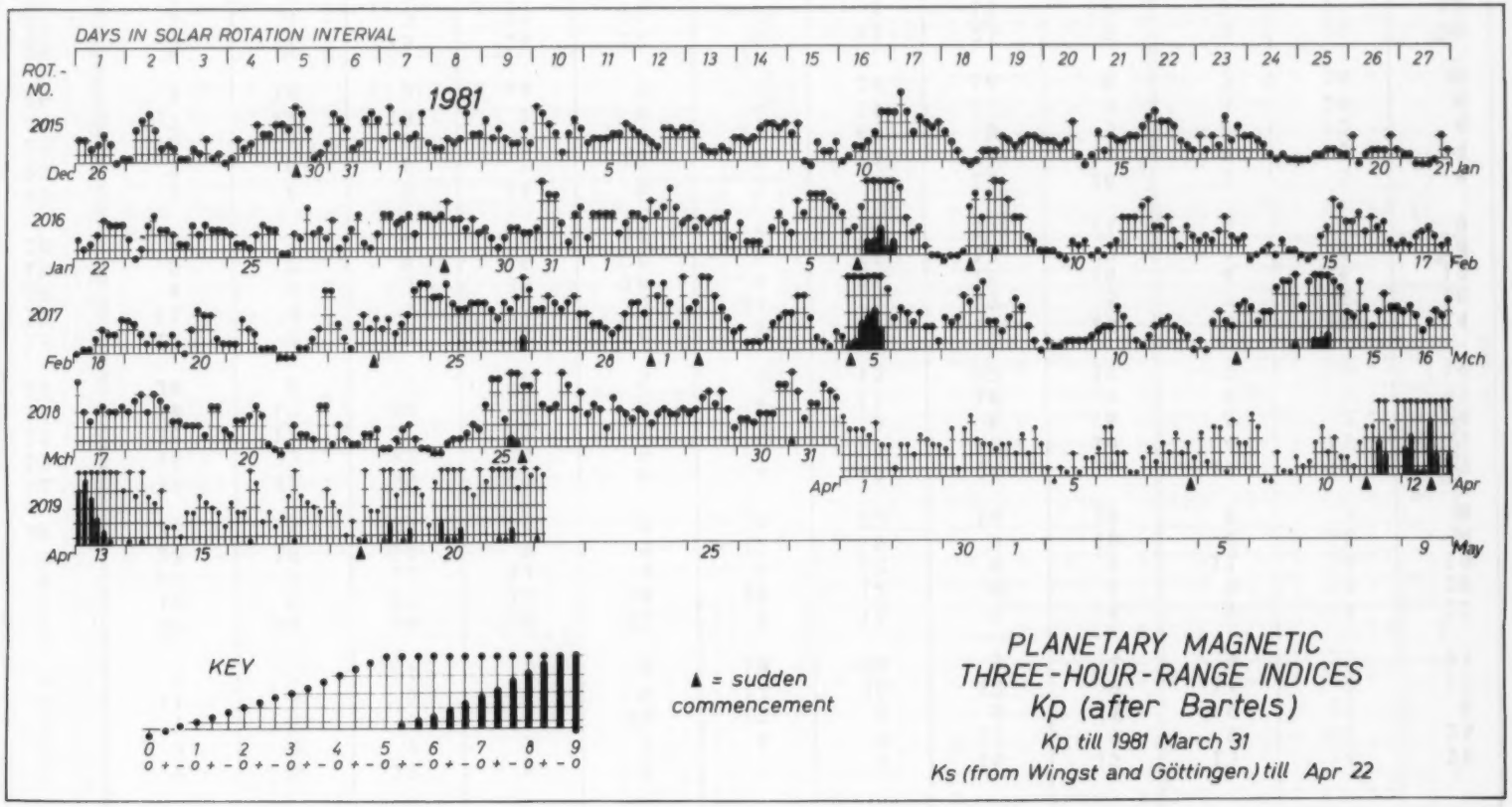
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp>30 or two Kp values≥3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complement[illegible] data are in IAGA Bulletin No.39.

DAILY AVERAGE INDICES Ap

DAY	1980 APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1981 JAN	FEB	MAR
1	4	8	22	5	4	7	2	16	19	13	14	28
2	3	4	7	3	7	4	5	11	7	9	22	25
3	7	3	9	4	20	12	5	5	21	9	13	8
4	11	4	5	7	8	12	26	12	8	14	9	12
5	7	7	4	15	4	10	22	5	4	9	25	81
6	28	12	16	10	21	9	14	6	4	9	48	11
7	18	9	27	13	10	10	12	6	6	6	20	20
8	17	7	23	14	4	8	12	6	9	11	14	10
9	20	18	14	8	9	12	16	9	10	6	22	4
10	22	8	33	4	9	4	22	14	10	9	3	8
11	30	38	59	10	8	6	40	24	16	19	10	7
12	28	23	32	5	8	18	11	12	16	4	11	11
13	18	14	27	9	6	16	5	6	6	6	7	28
14	10	17	10	9	6	8	11	10	8	6	3	45
15	20	6	5	6	5	8	15	22	10	7	10	19
16	12	3	9	6	26	8	3	16	16	12	10	14
17	11	3	3	6	10	14	5	11	5	8	6	18
18	4	4	3	30	18	4	21	16	15	4	6	19
19	5	8	8	16	28	6	11	17	79	3	6	10
20	6	5	6	9	10	7	4	17	21	4	9	9
21	5	4	6	14	8	2	7	13	26	2	5	8
22	9	6	6	5	10	8	23	8	11	9	6	4
23	6	11	6	4	5	5	44	10	5	8	12	4
24	7	12	13	7	4	4	14	12	3	8	20	4
25	9	34	8	46	5	7	24	16	8	7	24	36
26	5	7	15	26	12	5	13	21	6	8	29	28
27	5	3	3	15	22	6	3	19	10	8	21	14
28	4	4	3	14	4	6	2	23	4	16	11	12
29	6	6	5	6	4	9	3	16	9	15		18
30	8	10	8	8	6	5	10	24	13	7		16
31		16		6	7		30		15	22		26
MEAN	11	10	13	11	10	8	14	13	13	9	14	18

GEOMAGNETIC ACTIVITY INDICES



Symbol			2	3	4	5	6	7	8	9
$\bar{R}$ =	0	1-15	16-30	31-45	46-60	61-80	81-100	101-130	131-170	171...
R9,C9 =	0	1	2	3	4	5	6	7	8	9
Cp =	0.0-0.1	0.2-0.3	0.4-0.5	0.6-0.7	0.8-0.9	1.0-1.1	1.2-1.4	1.5-1.8	1.9	2.0-2.5

DAILY GEOMAGNETIC CHARACTER FIGURES C9 AND 3-DAY MEAN SUNSPOT NUMBERS R9

For explanation and previous years see J. Bartels, Abhandlungen der Akademie der Wissenschaften zu Göttingen, Beiträge zum I.G.J., Heft 3 (1958) (may be requested from Institut für Geophysik, Postfach 876, 34 Göttingen, Germany).

PRINCIPAL MAGNETIC STORMS

MARCH 1981

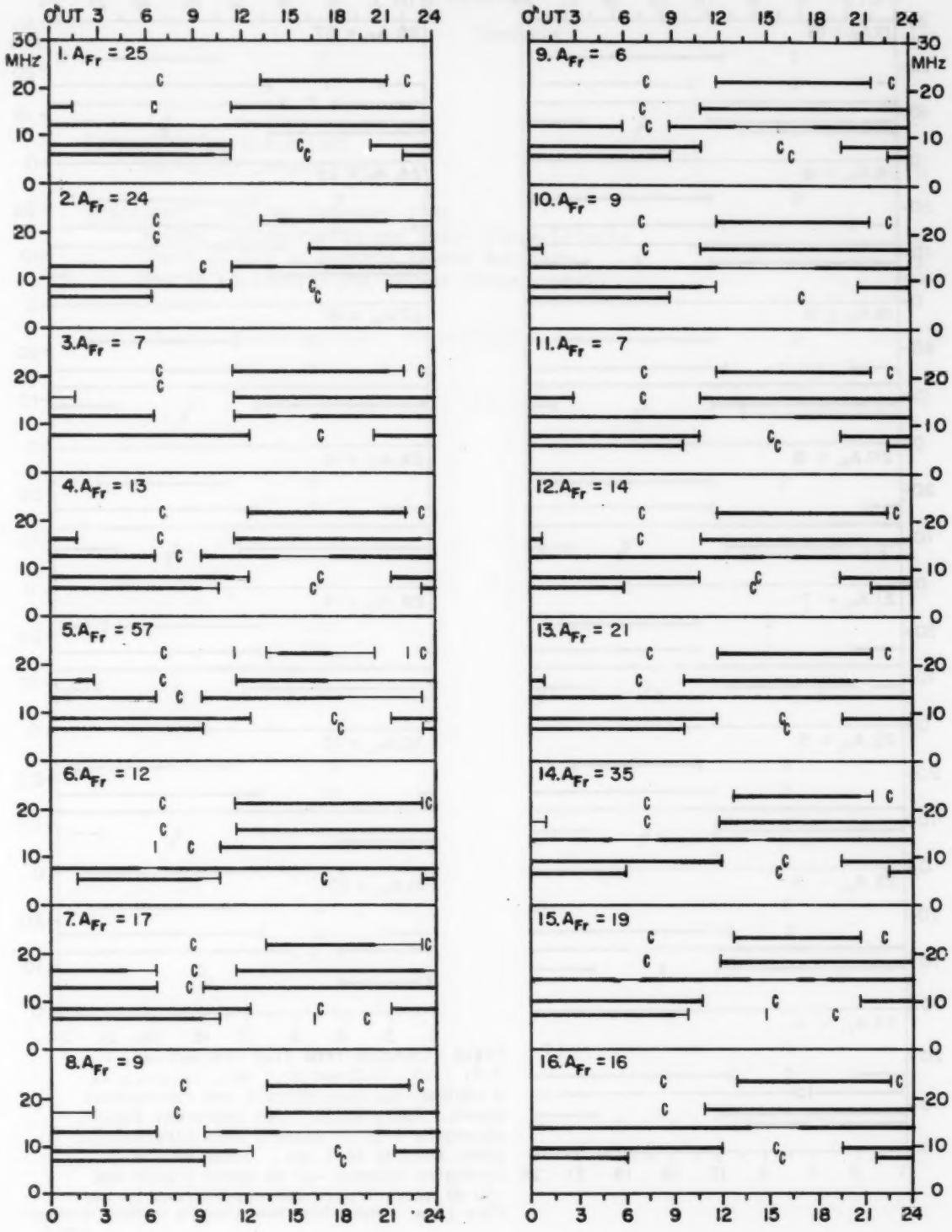
OBS. 3 letter code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	COMMENCEMENT hr min (UT)	TYPE	SC – AMPLITUDES D(°)	SC – AMPLITUDES H(γ)	SC – AMPLITUDES Z(γ)	MAXIMUM 3 HOUR – INDEX K DAY (3 HOUR PERIOD)	K	RANGES D(°)	RANGES H(γ)	RANGES Z(γ)	UT END DAY	UT END HOUR
COL	64.6N	01	0738	SC*	- 4	116	-18	01(4) 02(3,4,5)	6	170	1190	960	03	01
SIT	60.8N	01	0737	SC	- 3	56	7	01(5)	7	--	650	440	02	18
NEW	55.1N	01	0738	SC	3	44	3	01(4,5)	5	20	140	136	02	06
FRD	49.6N	01	0738	SC	- 2	38	- 5	01(4,5) 02(3,4)	5	10	132	69	03	--
HON	21.1N	01	07--	SC	--	22	8	01(2,3)	4	7	70	32	02	03
JAI	17.3N	01	0736	SC	- .5	37	- 4		-	5	177	33	02	01
SHL	14.6N	01	0736	SC	.4	36	3		-	4	193	46	02	01
UJJ	13.5N	01	0736	SC	- .2	42	-10		-	4	180	34	02	01
ABG	09.5N	01	0736	SC	- .5	38	- 9	01(4)	6	5	178	32	02	01
HYB	07.6N	01	0736	SC	- .6	40	- 4	01(5)	6	4	200	28	01	23
GUA	04.0N	01	0737	SC	..	29	- 8	01(4)	5	--	140	30	02	06
ANN	01.5N	01	0736	SC	- 1.1	77	19		-	4	256	50	02	01
TRD	01.2S	01	0736	SC	.2	77	..		-	3	271	..	02	01
PMG	18.6S	01	0736	SC	.7	32	28	01(5)	5	7	120	60	02	00
KGL	56.5S	01	0737	SCA	-73	48	--	01(8)	6	--	--	--	02	21
NEW	55.1N	02	0654	SC	1	26	--	02(4)	6	49	237	180	04	13
HON	21.1N	02	0654	SC	--	11	5	02(3,4,5)	4	4	53	16	02	19
JAI	17.3N	02	0654	SC	- .4	14	- 4		-	4	131	25	02	20
SHL	14.6N	02	0654	SC	.2	18	3		-	4	164	47	02	20
UJJ	13.5N	02	0654	SC	- .1	17	- 6		-	3	135	29	02	20
ABG	09.5N	02	0654	SC	- .7	28	- 9	02(3,4)	5	4	143	32	02	20
HYB	07.6N	02	0655	SC	- .5	22	- 4	02(3,4)	5	3	162	18	02	21
GUA	04.0N	02	0654	SC*	..	18	- 5	02(3)	5	--	120	20	02	19
ANN	01.5N	02	0654	SC	- 1.1	53	12		-	4	187	60	02	20
TRD	01.2S	02	0654	SC	.1	55	..		-	2	216	..	02	20
PMG	18.6S	02	0654	SC*	.5*	18	16	02(3,4,5)	5	5	90	80	02	10
KGL	56.5S	02	0654	SC	-48	-58	3	02(4,5)	5	--	--	--	02	21
COL	64.6N	04	2033	SC*	..	..	..	05(4,5,6)	7	396	1030	330	06	01
SIT	60.8N	05	0524	SC*	-15 *	47	- 6	05(5)	8	--	--	--	06	07
NEW	55.1N	05	0536	SC*	7	70	3	05(4)	9	54	850	526	06	22
WIT	54.2N	05	0535	SC*	- 8 *	40 *	8	05(6)	7	47	325	240	06	01
FRD	49.6N	05	0535	SC	2	72	-12	05(5)	7	30	330	165	09	--
HON	21.1N	05	0535	SC	1	45	19	05(4)	6	5	157	32	06	20
JAI	17.3N	05	0535	SC	- .7	56	-14		-	9	297	56	06	16
SHL	14.6N	05	0535	SC	.8	43	11		-	6	434	65	06	16
UJJ	13.5N	05	0535	SC	- .5	56	-14		-	7	391	57	06	16
ABG	09.5N	05	0535	SC	- 1.1	48	- 9	05(4)	8	12	486	68	06	16
HYB	07.6N	05	0535	SC	- .8	58	- 7	05(4,5,6)	8	9	457	34	06	21
GUA	04.0N	05	0535	SC*	1	74	-23	05(4)	8	10	330	50	06	20
ANN	01.5N	05	0535	SC	- 3.6	122	35		-	9	..	117	06	16
TRD	01.2S	05	0535	SC	..	..	..		-	5	..	..	06	16
PMG	18.6S	05	0535	SC*	1.9*	64	54	02(4,5,6)	6	13	290	130	08	15
HER	33.7S	05	0535	SC*	3	32	19	05(4,5)	7	46	285	186	06	01
GNA	43.2S	05	0535	SC	5.6	46	44	05(6)	7	29	250	280	07	20
KGL	56.5S	05	0534	SCA	-120	-90	-15	05(6)	9	--	--	--	06	00
COL	64.6N	07	07--	..	..	..	..	07(6)	7	341	1310	720	08	02
SIT	60.8N	07	0154	SC	- 4	34	7	07(6)	6	--	370	410	08	14
JAI	17.3N	07	0000	..	..	..	..		-	5	157	58	08	02
SHL	14.6N	07	0000	..	..	..	..		-	5	153	57	08	02
UJJ	13.5N	07	0000	..	..	..	..		-	3	165	48	08	02
ABG	09.5N	07	0000	..	..	..	..	07(4)	5	5	102	26	08	02
HYB	07.6N	07	0153	SC	- .1	18	- 1	07(6)	6	5	203	26	08	21
GUA	04.0N	07	0154	SC	..	23	- 6	07(5)	4	--	170	40	08	14
ANN	01.5N	07	0000	..	..	..	..		-	3	..	76	08	02
TRD	01.2S	07	0000	..	..	..	..		-	4	306	137	08	02
FRD	49.6N	12	1824	SC	2	11	- 3	13(8) 14(3,4,5,7)	5	27	157	57	18	--
COL	64.6N	12	1823	SC*	-12	59	23	14(4,5)	7	266	1620	330	16	08
SIT	60.8N	12	1824	SC*	9 *	-22	*- 9	* 14(4)	7	--	--	660	14	23
WIT	54.2N	12	1825	SC	- 2	38	0	13(8) 15(2)	6	33	220	75	14	16
HON	21.1N	12	1824	SC	--	11	3	14(4)	6	8	152	37	16	02
JAI	17.3N	12	1824	SC	- .7	24	- 4		-	11	233	58	16	03
SHL	14.6N	12	1824	SC	.2	21	4		-	8	239	51	16	03
UJJ	13.5N	12	1824	SC	- .4	26	- 5		-	9	231	49	16	03
ABG	09.5N	12	1824	SC	- .6	21	- 3	14(3,4)	6	8	223	58	16	03
HYB	07.6N	12	1824	SC	- .2	22	- 1	13(6)	6	5	176	27	13	23
GUA	04.0N	12	1824	..	..	..	..	13(8)	5	--	120	30	14	04
ANN	01.5N	12	1824	SC	- .7	24	13		-	9	356	82	16	03
TRD	01.2S	12	1824	SC	.1	19	27		-	5	361	..	16	03
PMG	18.6S	12	1824	SC*	.5*	14	12	14(4,5)	6	9	210	80	16	08
HER	33.7S	12	1825	SC	1	17	10	13(5,8) 14(3,4,5)	5	16	186	102	14	22
GNA	43.2S	12	1825	SC	3.2	22	17	14(4)	6	30	150	200	16	02
KGL	56.5S	12	1824	SC	-115	63	35	12(8)	4	--	--	--	13	02
NEW	55.1N	14	0411	SC	4	39	--	14(4,5)	8	38	600	500	16	09
HYB	07.6N	14	0300	..	..	..	..	14(3,4,5,6)	6	8	257	39	15	08
GUA	04.0N	14	0411	SC*	1	60	-19	14(4)	6	--	220	30	15	09
FRD	49.6N	24	19--	..	..	..	..	25(5)	6	24	136	88	--	--
HYB	07.6N	25	1748	SC	- .3	40	- 1	26(5)	5	7	121	29	26	21
COL	64.6N	25	05--	..	..	..	..	25(5,6) 26(5)	6	215	1320	790	26	23
SIT	60.8N	25	05--	..	..	..	..	25(5)	6	50	480	640	26	21
NEW	55.1N	25	0031	SC	2	13	--	25(2)	5	39	131	100	02	01
HON	21.1N	25	1748	SC	3	19	8	25(3,6,8) 26(1)	4	10	54	37	27	01
JAI	17.3N	25	0400	..	..	..	..		-	9	178	48	27	01
SHL	14.6N	25	0400	..	..	..	..		-	9	159	69	27	01
UJJ	13.5N	25	0400	..	..	..	..		-	8	186	44	27	01
ABG	09.5N	25	0400	..	..	..	..	25(5,6)	6	8	200	47	27	01
HYB	07.6N	25	0000	..	..	..	..	25(5,6)	6	4	229	32	25	17
GUA	04.0N	25	0033	..	..	..	..	25(2)	6	--	240	40	27	16
ANN	01.5N	25	0400	..	..	..	..		-	6	298	97	27	01
TRD	01.2S	25	0400	..	..	..	..		-	5	330	..	27	01
KGL	56.5S	25	1748	SC	16	42	22	25(8) 26(1)	6	--	--	--	26	03
HYB	07.6N	28	1200	..	..	..	..	29(5)	5	5	150	23	29	21
HYB	07.6N	30	0900	..	..	..	..	30(5)	4	9	123	28	31	23

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GHANGARA GUAM HERMANUS HONOLULU HYDERABAD
JAIPUR KERGUELEN NEWPORT PORT MORESBY SHILLONG SITKA TRIVANDRUM UJJAIN WITTEVEEN

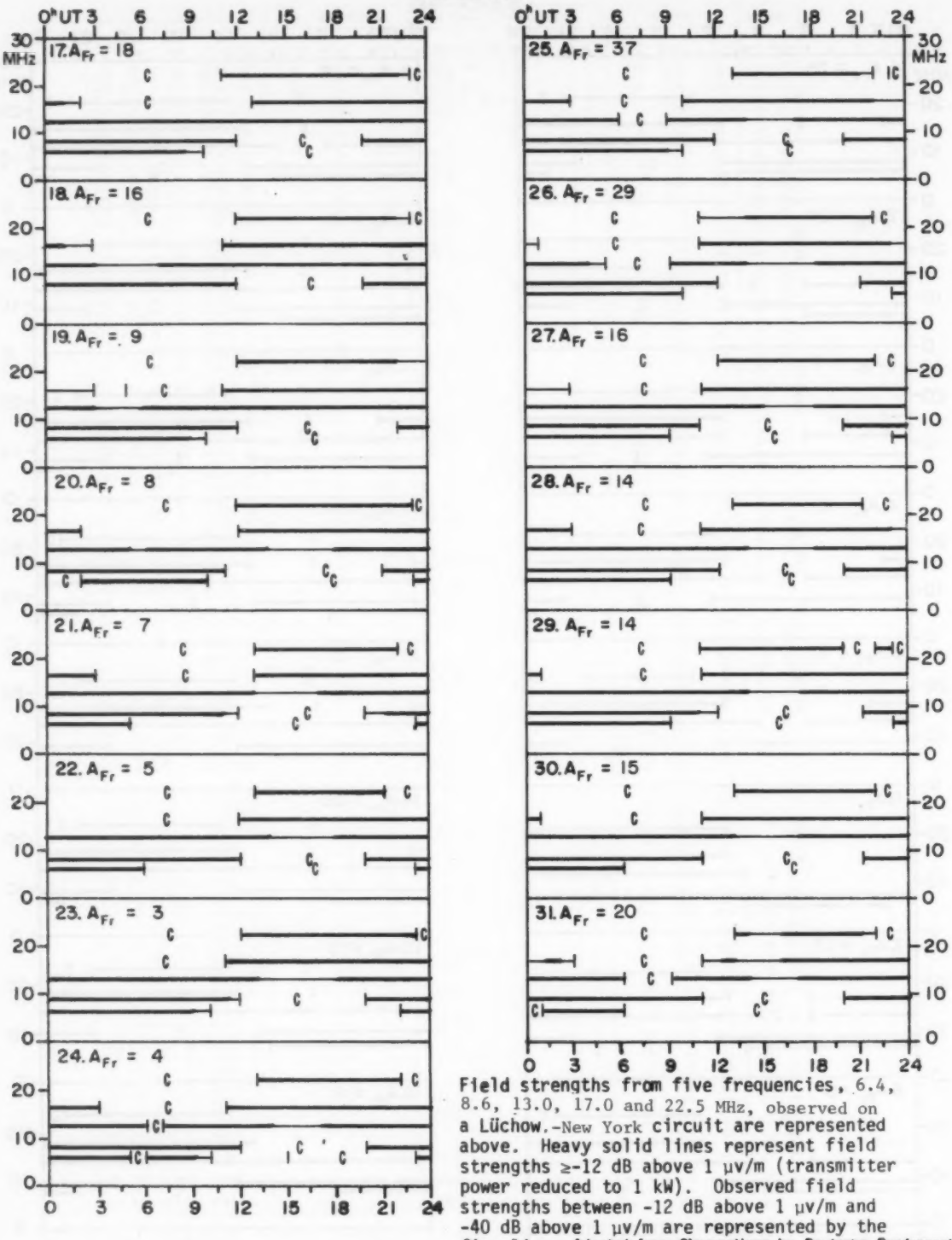
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

MARCH 1981



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

MARCH 1981



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Lüchow.-New York circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line. Adapted from Observations by Deutsche Bundespost

SGD 441 Part I (Prompt)

LATE DATA

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CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

MARCH 1981

Only four D3 limb observations were made during the month of March 1981:

3/3	No Holes Visible
3/10	No Holes Visible
3/24	No Holes Visible
3/30	No Holes Visible

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

FEBRUARY 1981

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

06 0847 A: SOD DOB NUR DOU VIC COI LNP MPO TWA; B: WNG WIT VAL FUR MMB EBR TOL GNA ACS CZT KGL DUM; C: NGK HAD AQU KAK HTY KNY

08 1345 A: SOD DOB NUR ESK WNG DOU VIC FUR EBR COI TOL MPO ACS TWA CZT KGL; B: WIT NGK VAL HAD AQU LNP GNA; C: MMB KAK HTY KNY

23 2139 A: COI; B: ESK WIT LNP; C: NGK (si: B: MPO)

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

07 1334 - 1401 TOL?

08 0138 - 0144 LNP GNA

08 0328 - 0350 MMB HTY GNA

12 0433 - 0438 LNP

17 2146 - 2250 KAK

19 0330 - 0500 MMB KAK KNY

20 0548 - 0554 LNP

20 0641 - 0727 MMB KAK HTY KNY LNP

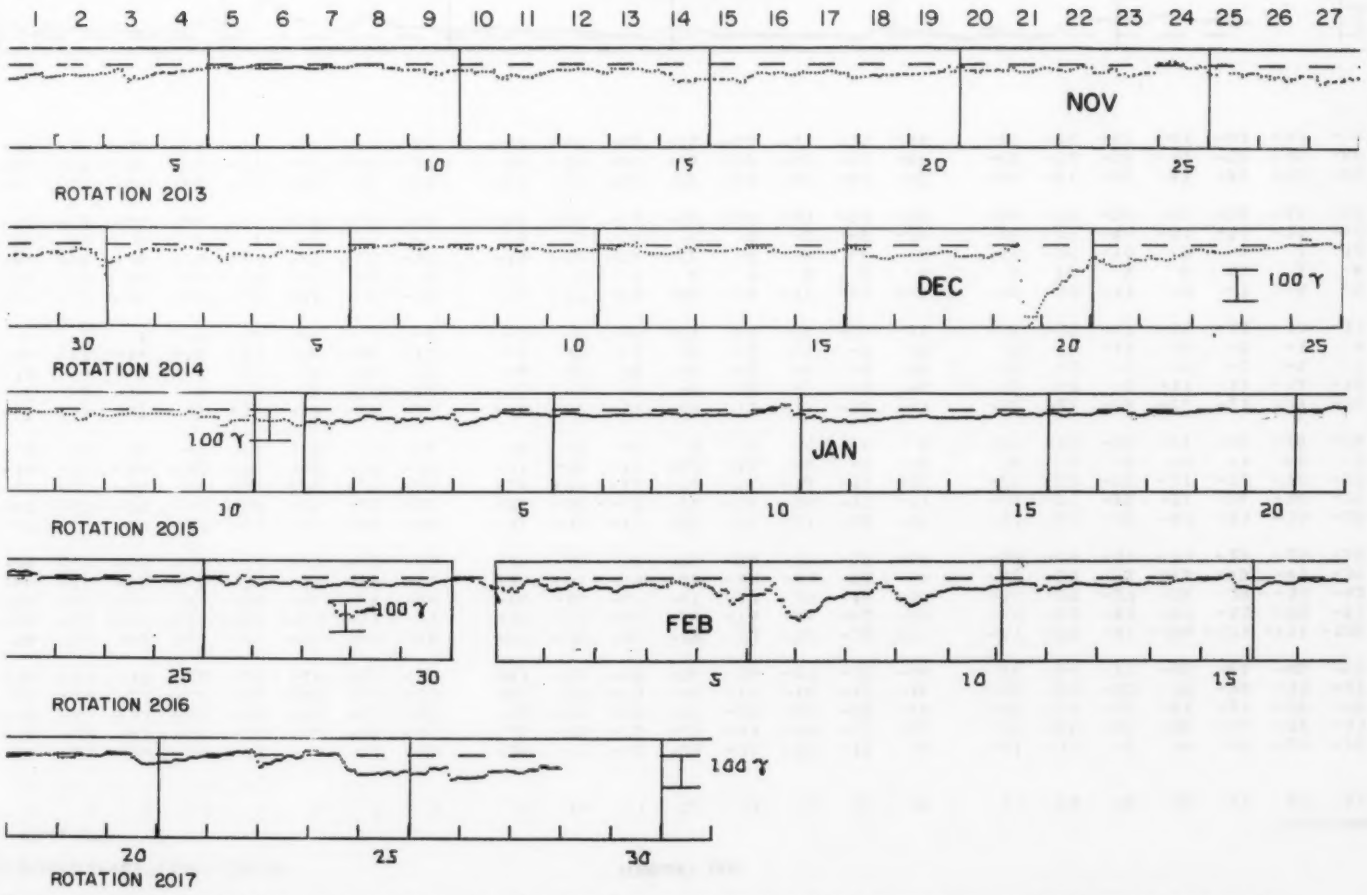
24 0006 - 0010 LNP

25 0241 - 0251 LNP

GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

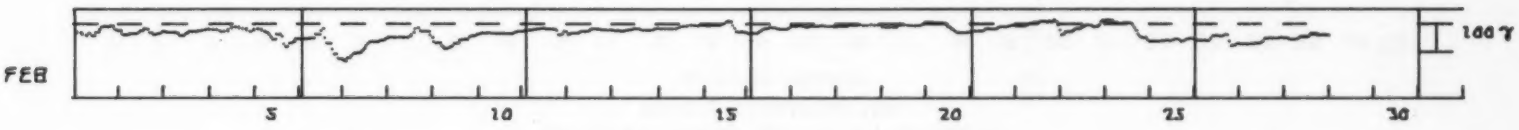
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

FEBRUARY 1981

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-33	-35	-36	-37	-41	-45	-42	-32	-36	-45	-40	-30	-28	-19	-11	-8	-11	-11	-9	-5	-8	-21	-25	-28
2	-26	-36	-42	-39	-37	-33	-34	-35	-36	-32	-29	-23	-23	-15	-22	-23	-35	-36	-41	-36	-34	-32	-31	-26
3	-30	-33	-33	-33	-33	-32	-33	-37	-43	-44	-45	-35	-31	-25	-25	-26	-29	-29	-23	-23	-21	-19	-19	-17
4	-22	-24	-23	-22	-26	-29	-32	-29	-26	-24	-19	-14	-11	-10	-12	-16	-20	-22	-22	-19	-26	-31	-27	-21
5	-18	-16	-17	-20	-27	-31	-33	-36	-41	-51	-58	-56	-36	-41	-35	-48	-74	-84	-77	-65	-63	-60	-53	-52
6	-54	-52	-53	-53	-52	-49	-48	-46	-47	-35	-36	-39	-23	-16	-53	-71	-71	-72	-91	-108	-103	-121	-124	-123
7	-128	-132	-117	-116	-109	-103	-98	-97	-99	-95	-90	-84	-75	-66	-62	-59	-63	-63	-61	-57	-55	-55	-51	-47
8	-44	-45	-46	-45	-46	-45	-44	-44	-46	-50	-47	-41	-37	-29	-16	-13	-14	-27	-27	-26	-29	-31	-43	-51
9	-66	-70	-66	-69	-79	-85	-89	-85	-81	-77	-74	-68	-64	-64	-58	-54	-52	-51	-52	-45	-40	-41	-39	-36
10	-34	-33	-31	-32	-32	-30	-30	-33	-34	-35	-35	-35	-36	-35	-35	-37	-38	-39	-37	-31	-28	-26	-25	-26
11	-25	-23	-22	-21	-22	-20	-18	-18	-16	-16	-15	-14	-16	-21	-20	-18	-21	-23	-28	-43	-41	-34	-25	-32
12	-41	-34	-31	-32	-37	-34	-28	-25	-26	-28	-25	-24	-19	-16	-17	-17	-20	-22	-25	-23	-24	-26	-25	-24
13	-27	-28	-28	-28	-30	-26	-25	-21	-20	-19	-18	-14	-18	-16	-19	-25	-25	-23	-22	-21	-23	-20	-17	-14
14	-14	-17	-16	-16	-19	-16	-18	-17	-16	-16	-15	-12	-10	-8	-7	-8	-6	-4	-4	-5	-7	-6	-7	-4
15	-4	-7	-8	-7	-6	-4	-3	-4	-5	-3	-1	1	7	10	6	3	-11	-19	-32	-33	-29	-28	-34	-34
16	-37	-38	-37	-35	-35	-32	-27	-23	-18	-15	-17	-15	-12	-15	-18	-17	-22	-22	-23	-22	-21	-19	-14	-10
17	-7	-8	-10	-5	-5	-9	-11	-15	-15	-9	-7	-8	-8	-7	-10	-6	-5	-7	-8	-11	-12	-12	-14	-14
18	-13	-9	-8	-8	-9	-7	-4	-3	-6	-6	-4	-3	-2	-6	-6	-5	-5	-3	-1	-5	-5	-4	-1	-5
19	-16	-17	-14	-11	-13	-16	-16	-12	-7	-5	-3	-4	-3	-5	-7	-5	-7	-9	-11	-8	-7	-3	1	6
20	0	2	1	0	-3	-1	0	-1	-2	-3	-6	-13	-13	-21	-25	-31	-35	-35	-37	-35	-33	-33	-31	-28
21	-24	-25	-25	-26	-24	-27	-24	-19	-16	-17	-20	-20	-19	-17	-13	-10	-10	-10	-11	-9	-7	-6	-5	-7
22	-8	-7	-8	-8	-8	-5	-2	1	3	5	5	4	7	9	8	8	6	10	5	6	13	2	-8	-27
23	-43	-36	-28	-28	-27	-27	-23	-18	-15	-17	-16	-12	-7	-3	-4	-4	-11	-15	-10	-9	-4	7	12	10
24	12	13	8	8	1	4	0	-5	0	2	4	1	0	-3	-9	-18	-28	-40	-48	-51	-53	-51	-60	-64
25	-62	-61	-64	-64	-63	-59	-59	-57	-55	-55	-63	-56	-54	-51	-57	-59	-64	-59	-56	-51	-54	-48	-49	-57
26	-63	-56	-57	-60	-60	-58	-62	-60	-51	-42	-42	-38	-45	-47	-44	-38	-36	-41	-64	-80	-76	-72	-66	-68
27	-73	-71	-70	-72	-71	-67	-67	-67	-64	-70	-68	-63	-59	-52	-49	-47	-48	-50	-48	-49	-52	-46	-46	-48
28	-49	-53	-58	-57	-57	-53	-51	-48	-43	-44	-46	-45	-43	-37	-34	-34	-35	-35	-42	-41	-43	-43	-41	-39



SOLAR PROTON EVENT (PROVISIONAL) APRIL 1981

Day/Time(UT)	Detector	Observation	Remarks
April 10/1100	H-alpha patrol	Start time of importance 1B(X1) flare; N11E53.	Max 1117 UT; end 1200 UT. Peak 10-cm flux 480 units above background.
10/1645	H-alpha patrol	Start time of importance 3B(X2) flare; N08W38.	Max 1655 UT; end 1746 UT. Peak 10-cm flux 600 units above background. Peak fluxes between 245 and 15400 MHz displayed U-burst configuration. Flare in H-alpha appeared as two wide bands with 20% umbral coverage.
10/1745	GOES-2	First detection of protons at geosynchronous altitude.	>10-MeV channel.
11/1700	Alaskan riometer chain	Station A(dB) L Anchorage 0.0 4.2 College 0.7 5.5 Ft. Yukon 0.0 6.5 Thule 1.8 >50	Absorption profile at time of maximum daylight response on Thule 30-MHz riometer.
11/1815	GOES-2	Maximum proton flux 48 part/cm^2 s sr.	>10-MeV channel.
11/2400	Space Shuttle Orbiter	Total exposure 10-100 millirems.	Theoretical accumulated radiation dose to astronauts had the shuttle been launched 10 Apr 1981. This exposure is of same order of magnitude as that received in 1 year by the general population from natural background radiation.
12/2400	NOAA-6	The 24-hour average of estimated hemispherical power input carried by charged particles into the auroral zone exceeded 70 x 10^9 Watts. NOAA-6 orbits Earth about its poles at an 800-km altitude.	
13/0000	GOES-2	Proton flux dropped below 10 part/cm^2 s sr.	>10-MeV channel.
13/0000-0300	Fredericksburg magnetometer	Onset of major magnetic storm.	No storm sudden commencement observed from 10/1645 UT flare, because of the moderately high level of geomagnetic activity already in progress.
13/0300-0600	Fredericksburg magnetometer	Three-hour range index K reached 9.	K9 followed by K8. (Geomagnetic field disturbance this large not recorded since August 1972.) Major storm due to 3B(X2) flare of 10 April (56-hour delay). The A index on the 13th reached 121.

This major magnetic storm's most intense geomagnetic field fluctuations occurred between about 2000 and 2300 local time--ideal for all four standard time zones spanned by the contiguous portion of the United States. In more than half the states reports of quiet and active auroral forms, red and green and sometimes white in color, flooded many weather bureaus, law enforcement agencies, radio stations and airport traffic control towers.

13/0300-0900	Central Hudson Gas & Electric	Possible damage to high voltage power system transformer.	Solar-induced current in monitored transformer exceeded 25 amperes for 0.5 hour during this period. Transformer noise also rose to extremely high level.
	Minnesota Light & Power	Protective relay tripped.	Device monitors a 500-kV line between Duluth, Minnesota, and Winnipeg, Ontario.
	Space Shuttle Orbiter	Up to 50% increase in drag.	
	GOES-4 and TIROS	Satellite charging problems.	

SOLAR PROTON EVENT (PROVISIONAL) APRIL 1981

Day/Time(UT)	Detector	Observation	Remarks
April 13/0430- 0530	British Antarctic Survey	Bright auroral display observed from Rothera, Antarctica.	A red veil extended some 30° above horizon and slowly moved from southwest to west before disappearing. White and green rays developed to the south as did occasional curtain forms.
13/0647	NOAA-6	Estimated hemispherical power input carried by charged particles into the auroral zone exceeded 250 x 10^9 Watts during this single polar crossing. The U.S. consumes on the average about 32 x 10^9 Watts each day.	
13/2400	NOAA-6	The 24-hour average of the estimated hemispherical power input carried by charged particles into the auroral zone approximated 98 x 10^9 Watts.	
24/1343	H-alpha patrol	Start time of importance 2B(X6) flare; N18W50.	Max 1400 UT; end 1541 UT. Peak 10-cm flux 750 units above background. Type II/IV dekametric burst; umbral coverage and possibly visible in white light.
24/1515	GOES-2	Proton flux first exceeded 10 part/cm^2 s sr.	>10-MeV channel.
24/1800	Thule 30-MHz riometer	Daylight absorption exceeded 2.0 dB.	
24/2330- 25/0030	GOES-2	Peak proton flux about 160 part/cm^2 s sr.	>10-MeV channel. Proton flux remained at this level for 60 min.
25/0000	Thule 30-MHz riometer	Peak daylight absorption 3.2 dB.	
26/0200	Thule 30-Mhz riometer	Daylight absorption dropped below 2.0 dB.	
26/0813	Fredericksburg magnetometer	Sudden commencement of moderate magnetic storm.	Geomagnetic disturbance due to 2B(X6) flare of 24 April (42-hour delay). Largest K value recorded was 7. The A index at Fredericksburg, Virginia, reached 46 on 26 April and 39 on the 27th.
26/2020	GOES-2	Secondary peak in proton flux 100 part/cm^2 s sr.	>10-MeV channel.
May 01/0700	GOES-2	Proton flux dropped below 10 part/cm^2 s sr.	>10-MeV channel.

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